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AMERICAN VETERINARY
MEDICAL ASSOCIATION

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Convention Number

85th Annual Meeting, San Francisco, August 16-19, 1948

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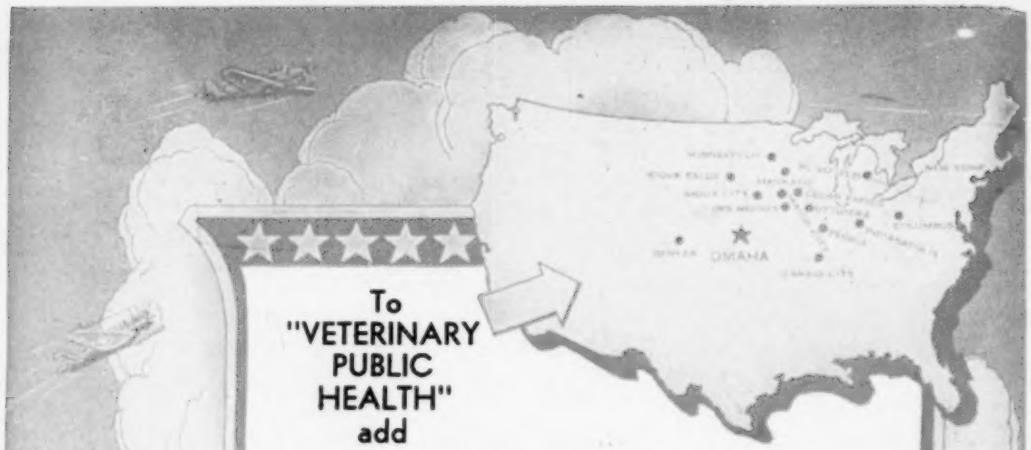

To
"VETERINARY
PUBLIC
HEALTH"
add

"VETERINARY-MEDICAL CONSERVATION"

To make applied veterinary science stand out clearly in the readjustment of the postwar world, there is but to couple the terms "Veterinary Public Health" and "Veterinary-Medical Conservation" and then weigh the union for its influence on the people's welfare.

Conserving vital resources, curtailing personal losses, relieving suffering, and collaborating in national, state, county, and municipal health programs, sum up the aims of modern veterinary medicine in the human affairs, related to animal production.

HOME OFFICES AND BIOLOGICAL LABORATORIES, OMAHA, NEBR.

FROM WHAT LEVEL OF CULTURE AND INDUSTRY COMES THE SANCTION OF SUBVERSIVE SCHEMES IN THE FAR-REACHING PROGRAM OF AGRICULTURAL READJUSTMENT?

SERUM PLANT, RALSTON, NEBR.

SERUM PLANT, 64TH ST. AND U ST., OMAHA, NEBR.

The Corn States Serum Co.
Omaha, Nebraska

Journal
of the
American Veterinary Medical Association

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VOL. CXIII JULY, 1948 NO. 856

The San Francisco Meeting—A Message from President Hagan

It's the Call of the Golden West!

IN AUGUST, the AVMA is holding its Eighty-Fifth Annual Meeting in San Fran-Francisco.

"East is East and West is San Francisco," according to an old song of the gold rush days. It's a city of contrasts—of beauty, character, romance, history, and charm. No other city is like San Francisco just as no other state is like California. And an iron-clad guarantee can be given that here is a city that will not be hot in August. Now is the time for you and your family to begin making plans for that long delayed vacation.

"All work and no play makes Jack a dull boy." We need the vacation and the rest, we need to round out our education by becoming acquainted with the parts of our great country that we have not seen, to learn of the latest technical and scientific developments in our profession, to meet and visit with our classmates and colleagues from other parts of the country, to check up on those California stories that we have been hearing all of our lives.

Don't let distance scare you—you who live in the eastern half of the country. Distance isn't what it used to be. If you must be in a hurry, take a plane, and at a cost that differs little from railroad fare. Eat breakfast in New York and dinner the same evening in San Francisco. If you can be a little more leisurely, sign up for the railroad tour beginning in Chicago. See the rolling plains, the deserts, and the great mountains from cool Pullmans in company with scores of friends. See the southwestern range country, Juarez in old Mexico, the marvelous Carlsbad Caverns, greatest in the world, the City of the Angels, Hollywood. On the return trip, after the meeting, visit Yellowstone, the Grand Canyon, the Colorado Rockies, or the Canadian Rockies, if you prefer, or other marvels of our great western spaces. While in California see the giant redwood trees, Yosemite, the old Spanish missions, the gold

President William A. Hagan

rush country. If you can spare the time and aren't fed up with the old bus, take the open road to California. Even from the East Coast you can do it in a week without breaking any speed laws, but that wouldn't give you much time to look around. And you will want to look around.

"Then ho, brothers, ho
To California go;
There's plenty of gold in the world we're told
On the banks of the Sacramento."

—*Another 49'er Song.*

I'll be looking for you in San Francisco!

s/WILLIAM A. HAGAN, *President.*

Executive and Legislative Sessions

Board of Governors.—Saturday, August 14, 10 a.m.

Committee on Budget.—Saturday, August 14, 2 p.m.

President-Elect L. M. Hurt

Executive Board.—Sunday, August 15, 9 a.m. and 2 p.m. Also, 7:30 p.m. if necessary.

House of Representatives.—First session, Monday, August 16, 9 a.m. Second session, Monday evening, 7:00 o'clock. If a third session is required, it will be scheduled by the House and presiding officers.

Election and Installation of Officers.—Nominations for the election of officers of the association will take place at the end of the Opening Session on Monday afternoon, August 16. If a ballot election is required on account of there being more than one nomination for the respective offices, polls will be set up in the AVMA executive secretary's office in the convention headquarters on Tuesday, August 17.

The officers to be elected at San Francisco are: president-elect, five vice-presidents, and treasurer.

President-Elect L. M. Hurt of Los Angeles will be installed as President at the General Session on Thursday morning, August 19, along with other officers elected at the annual meeting.

Officers of the AVMA for 1947-1948

President—W. A. Hagan, Ithaca, N. Y.

President-Elect—L. M. Hurt, Los Angeles, Calif.

First Vice-President—C. C. VonGremp, Decatur, Ga.

Second Vice-President—A. E. Cameron, Ottawa, Ont.

Third Vice-President—C. R. Curtis, Portage, Wis.

Fourth Vice-President—I. S. McAdory, Auburn, Ala.

Fifth Vice-President—E. H. Willers, Honolulu, T. H.

Executive Secretary—J. G. Hardenbergh, Chicago, Ill.

Assistant Executive Secretary—R. C. Klussendorf, Chicago, Ill.

Treasurer—W. A. Young, Chicago, Ill.

Editor-in-Chief—L. A. Merillat, Chicago, Ill.

Executive Board

(Year in which terms expire shown in parentheses)

Chairman—W. R. Krill, Columbus, Ohio (1949)

District I—A. L. MacNabb, Guelph, Ont. (1952)

District II—S. F. Scheidy, Drexel Hill, Pa. (1948)

District III—J. L. Axby, Indianapolis, Ind. (1948)

District IV—B. E. Carlisle, Camilla, Ga. (1949)

District V—C. C. Franks, Des Moines, Iowa (1950)

District VI—N. J. Miller, Eaton, Colo. (1951)

District VII—E. E. Wegner, Pullman, Wash. (1950)

District VIII—W. G. Brock, Dallas, Texas (1951)

District IX—C. P. Zepp, Sr., New York, N. Y. (1952)

District X—W. R. Krill, Columbus, Ohio (1949)

Ex Officio—W. A. Hagan, Ithaca, N. Y.; L. M. Hurt, Los Angeles, Calif.; B. T. Simms (1948), Washington, D. C.

Board of Governors, *ex officio*—W. R. Krill, *Chairman;* W. A. Hagan, and L. M. Hurt.

House of Representatives

(As of July 1, 1948)

	Votes	*Delegate*	*Alternate*
Alabama	(2)	I. S. McAdory	R. A. Ashwander
Arizona	(1)	John Micuda	J. B. McQuown
Arkansas	(2)	Hubert Shull, Jr.	J. S. Campbell
California	(5)	J. M. Arburua	E. F. Sheffield
Colorado	(2)	R. F. Bourne	J. R. Naylor
Connecticut	(2)	N. W. Pieper	I. R. Vail
Delaware	(1)	C. C. Palmer	J. L. Cherry
Dist. of Columbia	(1)	C. A. Manthei	Mason Weadon
Florida	(2)	S. V. Ramsey	J. V. Knapp
Georgia	(3)		
Idaho	(2)	A. P. Schneider	P. H. Graves
Illinois	(5)	L. R. Davenport	L. A. Dykstra
Indiana	(4)	H. D. Carter	
Iowa	(5)	P. O. Dorweiler	J. B. Bryant
Kansas	(3)	J. F. Knappenberger	L. E. Spong
Kentucky	(2)	A. S. Barnes	W. M. Coffee
Louisiana	(2)	W. T. Oglesby	M. H. Gandy
Maine	(1)	J. F. Witter	L. H. Batchelder
Maryland	(2)		
Massachusetts	(3)	L. A. Paquin	B. S. Killian
Michigan	(4)		
Minnesota	(4)	J. N. Campbell	C. H. Wetter
Mississippi	(2)	E. H. Durr	R. H. Stewart
Missouri	(3)	S. W. Haigler	H. L. Bussong
Montana	(2)		
Nebraska	(3)	O. H. Person	
Nevada	(1)	J. B. Key	Nick Klaich
New Hampshire	(1)		
New Jersey	(3)		
New Mexico	(1)		
New York	(5)	F. F. Fehr	M. C. Markham
North Carolina	(2)	A. A. Husman	P. C. McLain
North Dakota	(2)	J. F. Hinz	M. R. Benson
Ohio	(5)	F. J. Kingma	R. L. McMahan
Oklahoma	(2)	C. H. Fauks	C. S. Greer
Oregon	(2)	J. O. Schnautz	S. E. Philips
Pennsylvania	(5)	R. C. Snyder	E. L. Stubbs
Rhode Island	(1)	J. S. Barber	J. P. Delaplane
South Carolina	(2)		
South Dakota	(2)		
Tennessee	(2)	Dennis Coughlin	J. H. Gillmann
Texas	(3)	E. A. Grist	L. G. Cloud
Utah	(2)		
Vermont	(2)	E. F. Waller	D. A. Walker
Virginia	(2)	I. D. Wilson	O. F. Foley
Washington	(3)	P. G. MacKintosh	H. A. Trippeer
West Virginia	(1)	S. E. Hershey	Lucille S. Dimmerling
Wisconsin	(4)	C. R. Curtis	L. T. Donovan
Wyoming	(2)	H. E. Kingman	W. H. Lee
Army	(2)	G. W. FitzGerald	G. B. Jones
NAFV*	(2)		
Canal Zone	(1)	Daniel Stevenson	John Miner
Alberta	(2)	V. V. Christie	J. G. Anderson
British Columbia	(2)	E. H. Sproston	F. W. B. Smith
Manitoba	(2)	E. L. Houck	Alfred Savage
Ontario	(5)	E. F. Johnston	D. J. McLellan
Saskatchewan	(2)		
Puerto Rico	(1)		
Cuba	(4)	Mario Stincer	Angel M. Morales

*National Association of Federal Veterinarians.

Message from the Chairman, Committee on Local Arrangements, San Francisco Meeting

It is unnecessary, of course, to exhort any veterinarian who has previously attended an AVMA annual meeting to attend another. For years past, the scientific character of these meetings has been such that one is apt to wonder why every veterinarian, who is physically able, is not in attendance. The 1948 meeting will be no exception in this respect and, in addition, offers features that will make it one long to be remembered.

The City of St. Francis invites every member of the profession to attend with assurances that adequate accommodations will be provided for all. Do not let the slogan "sunny California" misguide you. San Francisco's coolness will delight you, especially if you remember some of the August meetings principally because of the heat. When you come, do not forget to bring your wraps and heavier clothing, women can wear their furs every day and evening.

The vast scenic beauties of the far West are incomparable. You will see, coming and going, depending on the route you choose, the Carlsbad Caverns, the orange groves of Southern California, Yellowstone National Park, Glacier National Park, Banff, and Lake Louise. Within a short distance of San Francisco, you can see the awe inspiring redwood trees, Yosemite National Park, and many other interesting sights.

San Francisco itself offers a number of outstanding attractions including the Golden Gate, Chinatown (the largest Chinese settlement outside of China), Fisherman's Wharf, the San Francisco Bay and Golden Gate bridges.

One of the unique features of the meeting will be the post-convention trip to Hawaii. This trip will take only a week and should be considered, if your time permits, a part of the convention.

The earnest desire of the local veterinarians to act as gracious hosts to their colleagues, we believe, is another important reason why the San Francisco meeting will be a great one. You can depend on us to do our very best to make everyone happy. The California veterinarians extend a most cordial invitation to every veterinarian to meet at "The Golden Gate in '48."

s/JOSEPH M. ARBURUA, *Chairman,*
Committee on Local Arrangements.

—San Francisco Convention Bureau

California Street cable car.

The 1948 Session

The Eighty-Fifth Annual Meeting of the American Veterinary Medical Association will be held at the Palace Hotel, San Francisco, Calif., Aug. 16-19, 1948. Executive sessions of the Board of Governors will be held on Saturday, August 14, and of the Executive Board on Sunday, August 15, beginning at 9 a.m. The first session of the House of Representatives will convene at 9 a.m., Monday, August 16; the second session, on Monday evening at 7 o'clock.

The opening session of the convention is scheduled for 1:00 p.m., Monday, August 16.

On the following pages is information regarding arrangements for the meeting, the programs of the General Sessions and Sections, the Women's Auxiliary meetings, the exhibits, meetings of related organizations, and other features. The program as given, although subject to minor revisions, is reasonably firm.

Convention Headquarters.—All sessions, exhibits, and other events will be held in the Palace Hotel except as otherwise announced or shown in the official program. General sessions and some section meetings will be held in the Gold Ball Room on the first floor; other sections and meetings will be on the second floor.

The technical (commercial) exhibits will occupy the Concert Room, the corridor leading to the Gold Ball Room, and Rooms A and B off this corridor, all located on the first floor of the Palace. Some of the educational exhibits will also be located in this area; others will be in rooms on the second floor of the hotel.

Headquarters of the AVMA, the Committee on Local Arrangements, and the press room will be on the second floor.

General Officers of the Local Committee

Joseph M. Arburua, General Chairman

C. J. Parshall, General Secretary

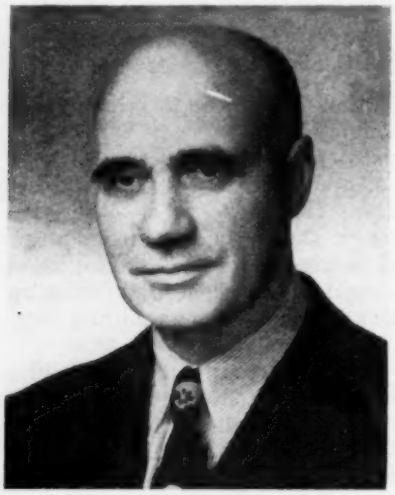
S. T. Michael, Vice General Chairman

Chairmen of the Local Committees

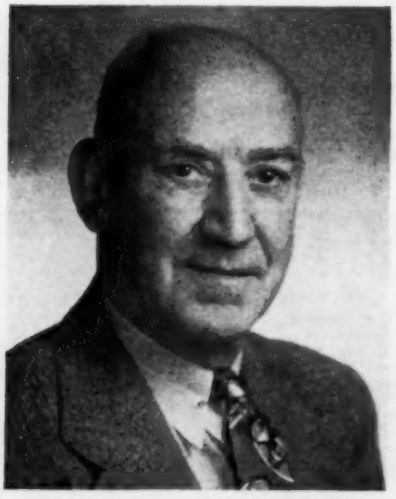
Eighty-Fifth Annual Meeting

San Francisco

Aug. 16-19, 1948



P. C. Guyselman, Entertainment



John McInnes, Exhibits

C. B. Miller, Garages and Airports

N. H. Casselberry, Meeting Rooms and Equipment

Chairmen of the Local Committees

Eighty-Fifth Annual Meeting

San Francisco

Aug. 16-19, 1948

K. G. McKay, Publicity and Public Relations

G. M. Simmons, Motion Pictures

E. G. LeDonne, Reception and Hospitality

N. E. Clemens, Hotels and Housing

H. F. Carroll, Registration and Information

Committee on Local Arrangements

Eighty-Fifth Annual Meeting

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JOSEPH M. ARBURUA, *General Chairman*

S. T. MICHAEL, *General Vice-Chairman* — C. J. PARSHALL, *General Secretary*

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N. H. CASSELBERRY
N. E. CLEMENS
P. C. GUYSELMAN
E. G. LEDONNE
JOHN MCINNES
K. G. MCKAY
S. T. MICHAEL
C. B. MILLER
C. J. PARSHALL
G. M. SIMMONS

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E. C. BLAND
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C. L. GOULD
G. B. HENNO
H. A. SCHNEIDER
S. M. SMITH

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H. W. C. LICHTENWALTER
A. C. ROSENBERGER
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G. S. REY
F. H. SAUNDERS

Hotels and Housing

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A. J. CREELY
P. H. HAND
B. F. MURRAY

Exhibits

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W. L. JOHNSON
D. MCARDLE
M. A. NORTHRUP
E. A. SIEGEL
F. H. WHITE

Motion Pictures

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JOHN M. ARBURUA
W. R. HINSHAW
M. C. LEVY
J. K. PERRY
REX TAYLOR

Meeting Rooms and Equipment

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R. A. BANKOWSKI
T. A. BERRY
W. W. BRIMER
C. D. STAFFORD
R. J. TOMPKINS

Entertainment

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R. E. DUCKWORTH
H. H. GROTH
JOHN KING
O. J. KRON
T. M. MCINTYRE

Garages and Airports

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G. P. BERTETTA
R. L. STOWE

Reception and Hospitality

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G. H. HART
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G. B. JONES
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V. W. MCGINNIS
J. A. MCKINNON
K. F. MEYER
C. H. REID
E. F. SHEFFIELD
J. TRAUM
J. L. TYLER
A. J. WAHN
F. W. WOOD

Special Showing of "Valiant Years"

The motion picture "Valiant Years" which tells the story of about fifty years in the life of a veterinarian and was produced as a public educational feature by the Associated Serum Producers, Inc., will be shown on Monday evening, August 16, particularly for the women and young people in attendance at the San Francisco convention. Although this film has been shown at many veterinary meetings since its release early this year, it is thought that many wives of veterinarians may not have had an opportunity to see it.

"Valiant Years" will also be shown as a prelude to the general session on Thursday morning, August 19.

A new and beautiful film, "San Francisco, Queen of Cities," will be shown also.

Women's Activities

MRS. J. R. BEACH *Co-Chairmen* MRS. C. B. MILLER

Reception

MRS. F. H. WHITE, *Chairman*
MRS. JOSEPH M. ARBURUA
MRS. J. F. AST
MRS. R. A. BANKOWSKI
MRS. G. H. BARRY
MRS. M. L. BOEVER
MRS. W. W. BRIMER
MRS. H. S. CAMERON
MRS. N. H. CASSELBERRY
MRS. N. E. CLEMENS
MRS. G. K. COOKE
MRS. E. S. COOPER
MRS. A. J. CREELY
MRS. K. D. DEVINE
MRS. R. E. DUCKWORTH
MRS. G. W. EBERHART
MRS. G. W. FITZ GERALD
MRS. R. J. FOSTER
MRS. P. C. GUYSELMAN
MRS. P. H. HAND
MRS. R. T. HANDEL
MRS. G. B. HENNO
MRS. L. O. JOHNSON
MRS. W. L. JOHNSON
MRS. G. B. JONES
MRS. O. J. KRON
MRS. E. G. LEDONNE
MRS. M. C. LEVY
MRS. R. E. LOVELL
MRS. S. H. MADIN
MRS. S. T. MICHAEL
MRS. JOHN MCINNES
MRS. NATHAN PUGATCH
MRS. C. H. REID
MRS. O. W. SCHALM
MRS. E. A. SEIGEL
MRS. G. M. SIMMONS
MRS. S. M. SMITH
MRS. R. P. SWARTZ
MRS. R. J. TOMPKINS

Young People's Committee

MRS. C. J. PARSHALL, *Chairman*
MRS. H. W. CAMPBELL
MRS. H. F. CARROLL
MRS. R. L. STOWE
MISS ANN MICHAEL
BEN NORTHRUP

Decorations

MRS. C. D. STAFFORD, *Chairman*
MRS. R. P. COPE
MRS. E. H. HARRISON
MRS. H. E. MCCLUNG

Registration and Information

MRS. M. A. NORTHRUP, *Chairman*
MRS. G. P. BERTETTA
MRS. H. H. GROTH
MRS. H. D. HILTON
MRS. JOHN KING
MRS. D. E. MADSEN
MRS. T. M. MCINTYRE
MRS. REX TAYLOR

Message from the Chairmen of the Committee on Women's Activities

For a hundred years, travelers have been coming to San Francisco—if you have not been among them, now it is your turn to discover the contagious cosmopolitan atmosphere of this unique city. For those who have come this way before, re-discovery will be a delight. We have much to offer and the Committee on Women's Activities has planned a program to include it all.

Mrs. J. R. Beach, Co-Chairman, Women's Activities

Mrs. C. B. Miller, Co-Chairman, Women's Activities

Would you like to have breakfast on famed Nob Hill? The view from the Fairmont Hotel in the morning is a sight to remember long after the convention has passed. A sightseeing tour, which alone is worth your trp, will take you from the very top of Twin Peaks to our world famous waterfront where ships from 'round the world stop daily. We'll show you San Francisco's Chinatown—the largest Chinese settlement in the world outside of China; you won't be able to resist our shops; you'll enjoy our inviting restaurants, the sidewalk flower stands, the bell-tuneful cable cars that climb our hills, and colorful Fisherman's Wharf.

To the north of San Francisco the Golden Gate Bridge leads to the Redwood Empire;

to the east, across the mammoth San Francisco-Oakland Bay Bridge, is the metropolitan East Bay area including Berkeley, the University of California, and Skyline Blvd., which is included in Baedeker's list of the world's most scenic drives. To the south, you will go "down the Peninsula," the location of many beautiful estates and Stanford University.

The Women's Committee on Activities extends to the wives of veterinarians a cordial invitation to this annual meeting of the AVMA in San Francisco—"The Golden Gate in '48." The Women's Hospitality Center will be located in a suite at the Palace Hotel, and here you will find your California hostesses with information and suggestions for the convention days.

Don't miss this meeting—San Francisco has cool summers so bring your top coat, enjoy the invigorating salty air, and participate in the women's activities.

S/MRS. J. R. BEACH and MRS. C. B. MILLER, *Co-chairmen, Women's Activities Committee.*

Women's Program

Sunday, August 15

Afternoon	Registration.
Evening	Open.

Monday, August 16

8:30 a.m.	Registration.
9:00 a.m.	View Commercial and Educational Exhibits.
10:30 a.m.	Meeting of Executive Board, Women's Auxiliary.
1:00 p.m.	Attend Opening Session.
3:00 p.m.	Meeting of Representatives from State, Regional, and Provincial Auxiliaries (*see* notice, this page.)
4:30 p.m.	Open House in Women's Lounge, in Royal Suite, Palace Hotel.
7:30 p.m.	Special Showing of "Valiant Years" and "San Francisco, Queen of Cities."

Tuesday, August 17

10:00 a.m.	Conducted Tour of Gump's and I. Magnin's Department Stores.
1:00 p.m.	Sightseeing Tour of San Francisco.
8:00 p.m.	Dinner and Fashion Show—Gold Room, Palace Hotel.

Wednesday, August 18

10:30 a.m.	Breakfast—Gold Room, Fairmont Hotel, followed by Annual Meeting of Women's Auxiliary.
7:00 p.m.	Banquet, President's Reception and Dance—Civic Auditorium.

Thursday, August 19

3:30 p.m.	Meeting of Executive Board of Women's Auxiliary (new officers).

Message from the President of the Women's Auxiliary

The Women's Auxiliary to the AVMA extends a most cordial invitation to the wives of veterinarians and to the wives of veterinary students to attend the Eighty-Fifth Annual

Mrs. Ashe Lockhart, President Women's Auxiliary

Meeting of the AVMA in San Francisco and to participate in the program planned for the ladies.

Of special interest this year is the meeting of the House of Representatives of the Auxiliary, which held its initial meeting in Cincinnati last summer. Mrs. A. E. Bott, first vice-president, has been in correspondence with all state, regional, and provincial auxiliaries, and Mrs. O. B. Curry, second vice-president, has corresponded with the auxiliaries of the Junior AVMA. Most of these groups expect to have official representation this year, and any interested women are invited to attend this session.

The annual meeting of the Auxiliary to the AVMA will follow the breakfast for the ladies on Wednesday morning, August 18. It is hoped all of the ladies attending the convention will be present for this pleasant and informative affair.

Cordially,

S/MRS. ASHE LOCKHART, *President.*

Meeting of Delegates from State, Regional, and Provincial Women's Auxiliaries

Special attention is invited to the meeting of delegates from women's auxiliaries to state, regional, and provincial veterinary associations which will be held at the Palace Hotel on Monday afternoon, August 16, at 3 o'clock. For the past two years, Mrs. Anthony E. Bott, Belle-

ville, Ill., now first vice-president of the Women's Auxiliary to the AVMA, has worked diligently and with great success in stimulating interest in, and organization of, auxiliaries where they did not already exist. Last year at Cincinnati, 25 state auxiliaries were represented and it is hoped that an even larger number will send delegates to San Francisco.

In addition to the official representatives from the various state, regional, and provincial auxiliaries, all interested women are cordially invited to attend the meeting on Monday afternoon, August 16. The purpose is to promote plans for auxiliary organizations, to outline processes of organization and development, and promote affiliation with the Women's Auxiliary to the AVMA.

At the meeting of auxiliary delegates last year, Mrs. John L. Wells, Blue Springs, Mo., was elected *chairman* and Mrs. Ralph A. Hendershott of Trenton, N. J., *secretary*. Mrs. Bott will be in charge of the meeting in San Francisco and is most anxious that representatives be present from each state, regional, and provincial auxiliary, together with all other interested women.

Officers of the Women's Auxiliary to the AVMA

1947-48

President—Mrs. Ashe Lockhart, Kansas City, Mo.

First Vice-President—Mrs. Anthony E. Bott, Belleville, Ill.

Second Vice-President—Mrs. O. B. Curry, Morristown, Ind.

Third Vice-President — Mrs. W. A. Hagan, Ithaca, N. Y.

Fourth Vice-President — Mrs. V. H. Miller, Charleston, W. Va.

Secretary-Treasurer—Mrs. C. L. Miller, River Forest, Ill.

Executive Board (*ex officio*)—The afore-named officers.

House of Representatives—Mrs. J. L. Wells, Blue Springs, Mo., *chairman*; Mrs. R. A. Hendershott, Trenton, N. J., *secretary*.

Young People's Mixer

The Committee on Local Arrangements calls attention to the special entertainment for young people attending the San Francisco convention, which is being planned for Monday afternoon, August 16. Details of this event are not available, but the Local Committee promises an enjoyable time for the sons and daughters of convention-goers and extends a cordial invitation to them to be at "The Golden Gate in '48."

Meetings of Other Organizations

Monday, August 16

9:00 a.m.	Association of American Veterinary Deans.
9:00 a.m.	Women's Veterinary Association.
9:00 a.m.	National Assembly of Chief Livestock Sanitary Officials.
9:00 a.m.	Zoo Veterinarians.
10:30 a.m.	Executive Board of Women's Auxiliary.
3:00 p.m.	Representatives of State, Regional and Provincial Auxiliaries. (All interested women invited.)
5:00 p.m.	Phi Zeta.

Tuesday, August 17

12:00 Noon	Veterinary Anatomists.
12:30 p.m.	Borden Award Luncheon.
4:00 p.m.	Conference of American Veterinary Examining Boards (first session).
4:00 p.m.	Extension Veterinarians (first session).
7:00 p.m.	Alumni Banquet and Entertainment.
8:00 p.m.	Women's Dinner and Fashion Show.

Wednesday, August 18

12:00 Noon	American Animal Hospital Association — Luncheon and Business Meeting.
12:00 Noon	Alpha Psi Luncheon.
12:00 Noon	Omega Tau Sigma Luncheon.
12:30 p.m.	Women's Auxiliary—Annual Meeting, following the breakfast at Fairmont Hotel.
4:00 p.m.	Conference of American Veterinary Examining Boards (second session).
4:00 p.m.	Extension Veterinarians (second session).
4:00 p.m.	National Association of Federal Veterinarians.

Thursday, August 19

12:00 Noon	Alumni Meetings.

Sitter Service for Children

Knowing that many veterinarians plan to make the trip to San Francisco a family vacation, the Committee on Local Arrangements calls special attention to the sitter service that will be available. Parents who bring young children may arrange for them to be cared for at any of the hotels while the parents attend convention functions.

Convention Registration

Advanced Registration.—The system of advanced registration, first tried for the Cincinnati meeting last year, will be used again this year to facilitate the handling of convention registrants and to help relieve the rush hours of the first two days. Advanced registration blanks will be mailed to members having confirmed hotel reservations. From these, the AVMA office will prepare registration forms in duplicate, returning one to the registrant. When presented at the "Advanced Registration" desk at San Francisco, the already-prepared badge, program, etc., will be handed to the registrant after payment of the registration fee.

Registration for early arrivals will open Sunday noon, August 15; the desk will be located in the south end of the lobby on the first floor of the Palace Hotel.

Full registration facilities will open at 8:30 a.m., Monday, August 16, and continue daily from 8:30 a.m. to 5:00 p.m.

Who May Register. — AVMA members and other graduates of accredited veterinary colleges; graduates of veterinary colleges declared eligible for AVMA membership; their wives and children; invited guests who are sponsored by members; exhibitor representatives.

Members of student AVMA chapters in accredited colleges may register without charge by presenting chapter membership cards for identification; student members of "veterinary clubs" at the newly established veterinary colleges may also register without charge when sponsored by a faculty member.

AVMA members in uniform or on active duty with the armed forces may register without payment of the registration fee.

Admission to all sessions, section meetings, and the commercial and educational exhibits will be by badge only. Uniformed attendants will be on hand to see that this requirement is observed.

Convention Information in Los Angeles

For the convenience of AVMA members visiting in California prior to the Eighty-Fifth Annual Meeting in San Francisco in August, the Entertainment and Hospitality committees of the Southern California Veterinary Medical Association have arranged to maintain an information desk, regarding the San Francisco meeting, in the Biltmore Hotel in Los Angeles. The desk will open Thursday, August 12 and close Sunday, August 15; some of the members of the CVMA and their wives will be at the desk during that time to help the visitors in any way they can. The committee members are Dr. G. W. Closson, San Gabriel, *chairman;* Dr. E. C. Baxter, Los Angeles; Dr. W. K. Riddell, Los Angeles; Dr. E. C. Jones, Beverly Hills; Dr. Jesse A. Jones, Los Angeles; Dr. G. N. Miller, Covina; Dr. N. L. Mc Bride, Pasadena; and Dr. G. H. Kenaston, San Bernardino.

Early Reservations Urged for Special Convention Tour

A printed folder describing the San Francisco convention tour in detail, with information about rates and an application form for tour reservations, was mailed the first week in June to approximately 7,500 AVMA members living east of the Rockies.

Those planning to take this tour, which starts from Chicago on the evening of August 9, are urged to make reservations at the earliest convenient date—and, if they have not already done so, to make arrangements at the same time, through the AVMA Housing Bureau in San Francisco, for hotel accommodations during their stay at the convention. A form for requesting hotel rooms appears on advertising page 44 of this issue. Special attention is directed to the fact that tour arrangements do not provide for housing or other expenses while in San Francisco. Regardless of which return route is selected (Canadian Rockies, Yellowstone Park, Glacier Park), all members of the tour party will leave San Francisco early on the evening of August 19—the day the convention closes—and they should arrange, therefore, to terminate their hotel reservations on that date.

The tour is open to non-members as well as AVMA members, their families, and guests. Persons desiring to take only the "going" part of the tour, are referred to page 312 of the April, 1948, JOURNAL, which lists the one-way fare, subject to change if railroad rates are revised.

"The Golden Gate in '48"

Daily Program Schedule

The following time table, including only the principal events, is, of necessity, somewhat tentative and subject to minor revisions.

Saturday, August 14

10:00 a.m. Board of Governors.
2:00 p.m. Committee on Budget.
2:30 p.m. Committee on Local Arrangements.

Sunday, August 15

9:00 a.m. Executive Board (first session).
10:00 a.m. Committee Meetings.
Setting-up of Commercial and Educational Exhibits.
12:00 Noon Registration opens.
12:30 p.m. Executive Board luncheon.
2:00 p.m. Executive Board (second session). Committee meetings.
3:00 p.m. Committee on Local Arrangements.
7:30 p.m. Executive Board (third session, if necessary).
Evening Open.

Monday, August 16

8:30 a.m. Registration
9:00 a.m. Official opening of Exhibits.
9:00 a.m. House of Representatives (first session).
9:00 a.m. Women's Veterinary Association (second annual meeting).
9:00 a.m. Meeting of American Veterinary Deans.
9:00 a.m. National Association of Chief Livestock Sanitary Officials.
9:00 a.m. Meeting of Zoo Veterinarians.
10:30 a.m. Executive Board of Women's Auxiliary.
1:00 p.m. Opening Session.
3:00 p.m. Representatives of State, Regional, and Provincial Auxiliaries.
4:30 p.m. Open House for Women in Women's Lounge, Rooms 2062-2064, Palace Hotel.
4:30 p.m. Young People's Mixer.
5:00 p.m. Meeting of Phi Zeta officers.
7:00 p.m. House of Representatives (second session).
7:30 p.m. Motion Picture, "Valiant Years."

Tuesday, August 17

8:30 a.m. Registration continued.
9:00 a.m. Exhibits open.
9:00 a.m. to 12:00 Noon Section Meetings: General Practice; Sanitary Science and Food Hygiene; Research (first sessions).
10:00 a.m. Conducted Tour of Gump's and I. Magnin's for women.
12:30 p.m. Borden Award Luncheon.
1:00 p.m. Sightseeing Tour of San Francisco for Women.
1:30 p.m. Section Meetings: General Practice; Sanitary Science and Food Hygiene; Research (second sessions).
4:00 p.m. Conference of American Veterinary Examining Boards (first session).
4:00 p.m. Extension Veterinarians (first session).
7:00 p.m. Alumni Banquet and Entertainment.
8:00 p.m. Women's Dinner and Fashion Show.

Wednesday, August 18

8:30 a.m. Registration continued.
9:00 a.m. Exhibits open.
9:00 a.m. to 12:00 Noon Section Meetings: Small Animals; Poultry; Surgery and Obstetrics (first sessions).
10:30 a.m. Women's Breakfast—Fairmont Hotel.
12:00 Noon American Animal Hospital Association — Luncheon and Business Meeting.
12:00 Noon Alpha Psi Luncheon.
12:00 Noon Omega Tau Sigma Luncheon.
12:30 p.m. Women's Auxiliary—Annual Meeting.
1:30 p.m. Section Meetings: Small Animals; Poultry; Surgery and Obstetrics (second sessions).
4:00 p.m. Conference of American Veterinary Examining Boards (second session).
4:00 p.m. Extension Veterinarians (second session).
4:00 p.m. National Association of Federal Veterinarians.
5:00 p.m. Meeting of Army Veterinary Corps Officers.
7:00 p.m. Banquet—Civic Auditorium, followed by President's Reception and Dance.

Thursday, August 19

9:00 a.m. Exhibits open.
9:00 a.m. to 12:00 Noon General Session, followed by Installation of Officers.
12:00 Noon Alumni Meetings.
1:30 p.m. General Session.
3:30 p.m. Executive Board of Women's Auxiliary (new officers).
Adjournment.

Opening Session

Monday, August 16, 1:00 p.m.

Music.

1:30 p.m.

Call to Order by President W. A. Hagan.
Invocation.—
The National Anthem.
Address of Welcome.—
Response.—
Greetings from Women's Auxiliary.—Mrs. Ashe Lockhart, President, Kansas City, Mo.
Music.
Address.—Dr. W. A. Hagan, President.
Announcements.—Dr. J. M. Arburua, General Chairman, Committee on Local Arrangements.
Presentation of Awards.
By Dr. W. A. Young, Chairman, Special Committee on Humane Act Award:
1948 Humane Act Award.
By Dr. W. A. Hagan, Chairman *ex-officio*, Committee on Awards:
Twelfth International Veterinary Congress Prize.
Borden Award for 1948.
By Dr. W. R. Krill, Chairman, Executive Board:
Gold Key to Incoming President.
Service Scroll to Retiring President.

4.00 p.m.

Nomination of Officers.

4:30 p.m.

Opening of Women's Lounge.

General Sessions

Thursday, August 19, 9:00 a.m.

Motion Picture—Valiant Years.
(Associated Serum Producers.)
Psychoneurosis—A Veterinary Problem.
L. C. Moss, Fort Collins, Colo.
The Air-Borne Transmission of Poultry Diseases.
K. B. DeOme, Ph.D., Berkeley, Calif.
Veterinary Ethics.
S. W. Haigler, St. Louis, Mo.
Installation of Officers.
Preventive Veterinary Medicine.
K. F. Meyer, San Francisco, Calif.

12:00 Noon

Adjourn for luncheon period.

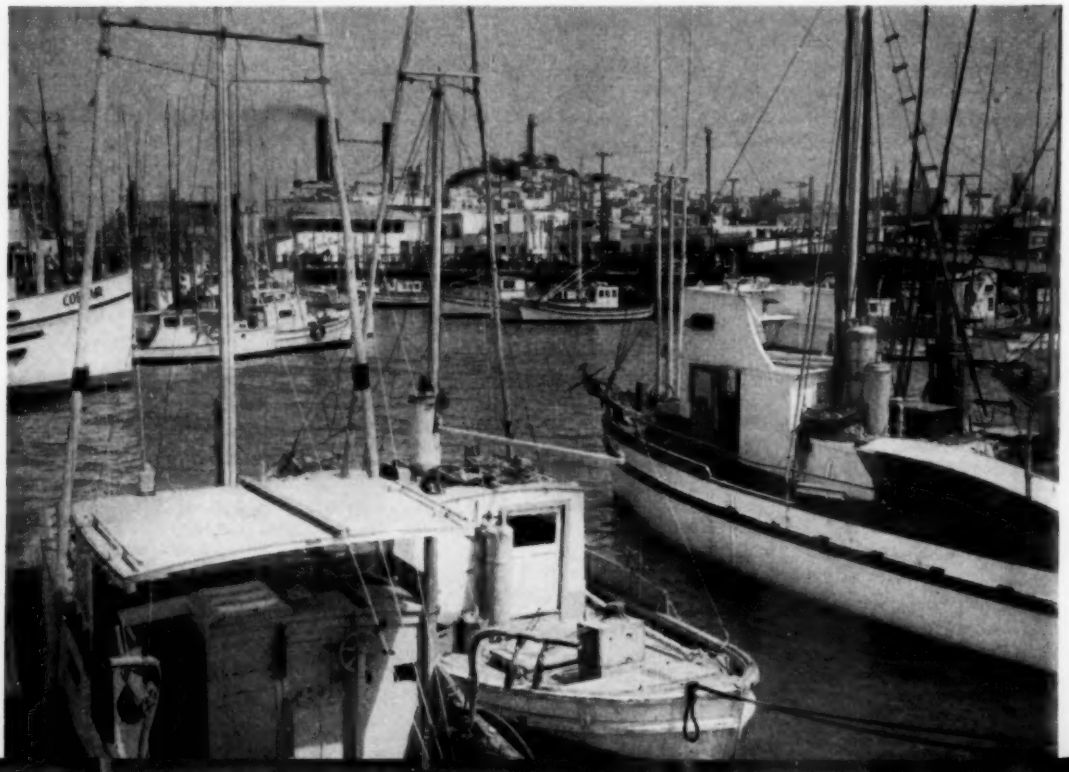
Thursday, August 19, 1:30 p.m.

The Importance of Radioactive Isotopes to Veterinary Science.
Logan M. Julian, Berkeley, Calif.
Veterinary Education in Great Britain.
W. M. Mitchell, Edinburgh, Scotland.
Grant-in-Aid Public Health Research for Veterinary Institutions.
C. J. Van Slyke, Washington, D. C.
Foot-and-Mouth Disease.
B. T. Simms, Washington, D. C.

3:30 p.m.

Adjournment.

Fisherman's Wharf . . . a bit of Naples to the eye—a bit of heaven to the nostrils if you love fresh seafood. *—San Francisco Convention Bureau*



Section Programs

Section on General Practice

(Picture not received from Dr. Britton.)

John Britton, Willits, Calif., Chairman

G. M. Wagaman, Kokomo, Ind., Secretary

Tuesday, August 17, 9:00 a.m.

Motion Picture—Lamb Diseases.
Floyd Cross, Ft. Collins, Colo.

Opening Remarks by the Chairman.

Report of Secretary.

Nutrition of Farm Animals.
L. L. Madsen, Ph.D., Logan, Utah

Summary of Procedures for Diagnosing Bovine Venereal Trichomoniasis and Handling Affected Herds.
D. E. Bartlett, Beltsville, Md.

Panel Discussion on Veterinary Pediatrics:
Moderator—John W. Britton, Willits, Calif.

Diseases of Foals.
Major B. F. Trum, V.C., Ft. Robinson, Neb.

Diseases of Calves.
W. J. Gibbons, Auburn, Ala.

Diseases of Lambs.
Floyd Cross, Ft. Collins, Colo.

Diseases of Pigs.
G. A. Young, Austin, Minn.

12:00 Noon

Adjourn for luncheon period.

Tuesday, August 17, 1:30 p.m.

Motion Picture—The Small Hospital in General Practice.
A. E. Erickson, Charlotte, Mich.

Nominations for Section Officers.

The Control of Ovine Enterotoxemia.
E. M. Baldwin, Omaha, Neb.

Anesthesia and Restraint of Large Animals.
W. M. Coffee, La Center, Ky.

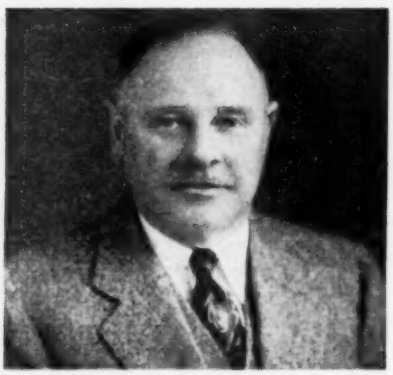
Laboratory Aids in the Diagnosis of Diseases.
C. F. Schlotthauer, Rochester, Minn.

Panel Discussion on Large Animal Hospital Practice:
Moderator—E. J. Frick, Manhattan, Kan.
H. E. Clarke, Petaluma, Calif.
W. M. Coffee, La Center, Ky.
A. E. Erickson, Charlotte, Mich.
C. Harvey Smith, Crown Point, Ind.

Section Programs

Section on Sanitary Science and Food Hygiene

M. D. Baum, Denver, Colo., Chairman



G. K. Cooke, Berkeley, Calif., Secretary

Tuesday, August 17, 9:00 a.m.

Motion Picture—The Red Wagon.
(Swift & Co.)

Opening Remarks by the Chairman.

Report of Secretary.

Public Health Significance of Bovine Udder Infections.
I. A. Merchant, Ames, Iowa.

Q Fever—A Brief Survey of the Problem.
R. R. Parker, Ph.D., E. J. Bell, and H. J. Stoenner, Hamilton, Mont.

Panel Discussion on Veterinary Public Health and the Health of the Nation:
Moderator—J. H. Steele, Atlanta, Ga.
W. L. Halverson, M.D., San Francisco, Calif.
L. Rowles, Topeka, Kan.
J. D. Vagneur, Grand Junction, Colo.

12:00 Noon

Adjourn for luncheon period.

Tuesday, August 17, 1:30 p.m.

Strip Film—Trichinosis.
(U. S. Public Heath Service.)

Nominations for Section Officers.

A Review of Histoplasmosis as Affecting the Veterinarian.
Joseph Ruhe, Shawnee, Kan.

Listerellosis in Cattle and Sheep.
Rue Jensen and D. R. Mackey, Ft. Collins, Colo.

Progress Report—Committee on Milk and Food Hygiene.
H. E. Kingman, Jr., Chicago, Ill.

Veterinary Food Inspection Service of the Armed Forces.
M. V. Starnes, Chicago, Ill.

Section Programs

Section on Research

J. M. Murphy, Ithaca, N. Y., Chairman

O. W. Schalm, Berkeley, Calif., Secretary

Tuesday, August 17, 9:00 a.m.

Motion Picture—Some Types of Forage Poisoning in Oregon Cattle and Sheep.
J. N. Shaw and O. H. Muth, Corvallis, Ore.

Opening Remarks by the Chairman.

Report of Secretary.

The Rôle of Plasma Fractions in Passive Immunization and Treatment.
H. S. Cameron, Davis, Calif.

The Epidemiology of Vibrionic Abortion of Sheep.
R. W. Lindenstruth and B. Q. Ward, M.S., Laramie, Wyo.

Epidemiology of Mastitis—The Relative Importance of Exposure and Age in the Spread of Streptococcus Agalactiae Infection.
R. W. Ormsbee and O. W. Schalm, Berkeley, Calif.

Idiopathic Hemoglobinuria in Cattle.
W. J. Pistor, Tucson, Ariz.

The Control of Enterotoxemia in Feedlot Lambs.
A. W. Deem, Rue Jensen, and Floyd Cross, Ft. Collins, Colo.

12:00 Noon

Adjourn for luncheon period.

Tuesday, August 17, 1:30 p.m.

The Use of Synthetic Anionic Detergents in Veterinary Medicine.
E. C. McCulloch, Pullman, Wash.

Nominations for Section Officers.

The Effect of Environment on the Physiological Well-Being of Swine.
Hubert Heitman, Ph.D., and E. H. Hughes, Ph.D., Davis, Calif.

The Study of Fecal Androgens in the Cystic-Ovary Cow.
R. B. Casady, Davis, Calif.

Ulcerative Dermatosis of Sheep.
E. A. Tunnicliff, Bozeman, Mont.

Susceptibility of Furbearing Animals to the Toxins of Clostridium Botulinum.
E. R. Quortrup, Berkeley, Calif.

Experimental Avitaminosis A in Sheep.
D. F. Eveleth, D. W. Bolin, M.S., and Alice I. Goldsby, A.B., Fargo, N. Dak.

Section Programs

Section on Small Animals

E. C. Jones, Beverly Hills, Calif., Chairman

H. H. Groth, San Mateo, Calif., Secretary

Wednesday, August 18, 9:00 a.m.

Clinical Cases, Illustrated.
J. E. Greene, Auburn, Ala.

Opening Remarks by the Chairman.

Report of Secretary.

Organisms Associated with Intestinal Disturbances in Dogs: Differential Diagnosis and Specific Therapy.
J. E. Craige, Seaside, Calif.

Diagnosis of Diseases of the Urinary Tract.
D. L. Coffin, Boston, Mass.

Selected Topics in Pharmacology and Toxicology.
P. J. Hanzlik, M.D., San Francisco, Calif.

Open Reduction with Metallic Fixation in Man.
Kenneth Townsend, M.D., Beverly Hills, Calif.

12:00 Noon

Adjourn for luncheon period.

Wednesday, August 18, 1:30 p.m.

Motion Picture—Ear Cropping.
R. P. Swartz, Vallejo, Calif.

Nominations for Section Officers.

Observations in Treating Dogs for Dirofilaria Immitis.
F. J. Kingma, Columbus, Ohio.

Allergy and Antihistaminic Therapy in Veterinary Practice.
G. W. Rawson, Summit, N. J.

Surgical Problems of the Canine Hip Joint.
Otto Stader, Ardmore, Pa.

An Experimental Basis for Amino Acid Therapy in Canine Practice.
O. H. Siegmund, New York, N. Y.

Results of Feeding Heat-Processed Dietary of Man to Experimental Animals, with Special Reference to Skeletal Changes.
Francis Pottenger, M.D., Monrovia, Calif.

Section Programs

Section on Poultry

J. P. Delaplane, Kingston, R. I., Chairman

W. R. Hinshaw, Davis, Calif., Secretary

Wednesday, August 18, 9:00 a.m.

Motion Picture—Virus Pneumonia.
J. P. Delaplane, Kingston, R. I.

Opening Remarks by the Chairman.

Report of Secretary.

Procedure and Technique of Poultry Inspection.
P. J. Brandly, Washington, D. C.

The Use of Estrogens for Fattening Poultry.
F. W. Lorenz, Ph.D., Davis, Calif.

Symposium on Newcastle Disease Prevention:

The Modification of Virus by Cultural Methods.
J. R. Beach, R. A. Bankowski, and K. B. DeOme, Ph.D., Berkeley, Calif.

Immunization with Live Virus.
F. R. Beaudette, J. A. Bivins, and Barbara Rhodes Miller, B.S., New Brunswick, N. J.

Vaccination.
H. E. Moses, Lafayete, Ind.

12:00 Noon

Adjourn for luncheon period.

Wednesday, August 18, 1:30 p.m.

Motion Picture—Poultry Disease (or) Poultry Sanitation.
C. C. Ellis, Amherst, Mass.

Nominations for Section Officers.

The Use of Poultry Diagnostic Laboratories.
E. E. Jones, Los Angeles, Calif.

Symposium on the Use of Sulfonamides for Control of Poultry Diseases:

Respiratory Diseases.
J. P. Delaplane, Kingston, R. I.
Discussion—C. A. Bottorff, Pearl River, N. Y.

Parasites.
E. M. Dickinson, Corvallis, Ore.
Discussion—R. A. Bankowski, Berkeley, Calif.

Septicemic Diseases, Including Cholera and Salmonellosis.
C. A. Brandly, Madison, Wis.
Discussion—E. H. Peterson, Pullman, Wash.

Section Programs

Section on Surgery and Obstetrics

H. W. Johnson, Ft. Collins, Colo., Chairman

A. G. Danks, Ithaca, N. Y., Secretary

Wednesday, August 18, 9:00 a.m.

Motion Picture—Sutures.
James Farquharson, Ft. Collins, Colo.

Opening Remarks by the Chairman.

Report of Secretary.

Endocrinology and Its Relation to Reproduction.
G. H. Hart, Davis, Calif.

Ten Years of Horse Breeding in the Army.
Col. W. E. Jennings, V.C., Washington, D. C.

Riboflavin and the Control of Equine Periodic Ophthalmia.
Major T. C. Jones, V.C., Washington, D. C.

Regulation of Racing.
J. N. Frost, Ithaca, N. Y.

Fractures of the Third Phalanx and Sesamoids in the Race Horse.
J. E. Peters, East Pasadena, Calif.

12:30 p.m.

Adjourn for luncheon period.

Wednesday, August 18, 1:30 p.m.

Motion Picture.
E. R. Frank, Manhattan, Kan.

Nominations for Section Officers.

The Rôle of the Veterinarian in an Artificial Insemination Program.
G. R. Raps, Ames, Iowa.

Dystocia in the Sow.
F. B. Young, Waukee, Iowa.

Studies on Reproduction in the Bovine.
W. M. Thorning and E. M. Gildow, Carnation, Wash.

Traumatic Gastritis and Frothy Bloat with Special Reference to Surgical Treatment.
C. H. Seagraves, Oregon City, Ore.

Form, Development, and Topography of the Stomach of the Ox.
J. D. Grossman, Columbus, Ohio.

Educational Exhibits

K. B. DEOME

VETERINARY SCIENCE DEPARTMENT, UNIVERSITY OF CALIFORNIA

A display of apparatus developed for the study of airborne infections. Demonstrations will be presented to show how virus droplet nuclei clouds or dustborne virus can be produced.

LOGAN M. JULIAN

VETERINARY SCIENCE DEPARTMENT, UNIVERSITY OF CALIFORNIA

An exhibit portraying the use of plastic injected, corrosion specimens in the study of normal and pathologic tissues. Specimens of heart, liver, lungs, and kidneys are presented.

O. W. SCHALM

VETERINARY SCIENCE DEPARTMENT, UNIVERSITY OF CALIFORNIA

A presentation of fixed, stained specimens of the bovine udder showing embryologic development, postnatal growth and involution, and gross pathologic changes produced by chemical irritants and certain infections.

VETERINARY PUBLIC HEALTH

A series of panels prepared a year ago under the joint sponsorship of the AVMA, the U. S. Public Health Service, the U. S. Department of Agriculture, and the Army Veterinary Corps. This series of seven double-faced panels (total 14) can help each member to realize the scope of the profession and the need for diversification of interests, regardless of the primary type of work being done.

N. R. BREWER

NATIONAL SOCIETY FOR MEDICAL RESEARCH

This will be the third annual exhibit of the National Society for Medical Research. Each year the Society presents an exhibit at the annual meeting of the American Veterinary Medical Association as part of a program to inform the public of the necessity and humaneness of the use of animals in research in the medical sciences. Selected for material is research work performed in medical schools primarily for the benefit of human beings but in which the dog has benefited as well. This year there will be an exhibit on recent advances in blood clotting; on the use of amphetamine for obesity and for anesthesia; and on thoracic surgery.

ELECTRON MICROSCOPE DIVISION, RADIO CORPORATION OF AMERICA

An exhibit of electron micrographs of various viruses and bacteria which are pathogenic for man and animals.

R. H. BRADBURY, VETERINARY PRACTITIONER

MOUNT VERNON, WASHINGTON

Dr. Bradbury has made photography, as applied to veterinary medicine, his hobby. He will present selected photographs of gross and microscopic materials portraying animal diseases encountered in his practice.

MAJOR T. C. JONES, V.C.

REGISTRY OF VETERINARY PATHOLOGY

The theme of this exhibit is the differential diagnosis of canine distemper and canine infectious hepatitis. The clinical and pathologic aspects of these disease entities are presented in the form of color photographs and color transparencies.

J. H. STEELE

U. S. PUBLIC HEALTH SERVICE

The exhibit will consist of the portrayal in panel form of rabies control and the certain phases of the epidemiology of brucellosis.

AVMA PUBLIC RELATIONS DEPARTMENT

An exhibit of typical releases prepared during the preceding year, including radio dialogue scripts for state associations; radio fillers; news releases to the metropolitan papers and to farm and livestock journals; and printed items clipped from papers throughout the country to indicate the use that has been made of this news material. There also will be copies of the "AVMA Press Service," the monthly clipsheet formerly called "Animal Health Topics." This has circulated each month, since February, 1947, to more than 5,000 rural weekly newspapers to keep the editors and their subscribers aware of the service which veterinarians can render and the place they should occupy in the life and activity of the community.

S. W. HAIGLER, R. A. MERRILL, AND R. C. SNYDER

AVMA SPECIAL COMMITTEE ON CODE OF ETHICS

The Committee has selected examples of the proper types of listing for phone directories, the approved types of letter head, bill head, and professional card for veterinarians and veterinary hospitals. It is a new exhibit, designed as a follow-up to the display at the Cincinnati meeting last August and at various other meetings during the year. Through the coöperation of similar committees in the several state associations, there has been a noticeable improvement in the type of listings used in various parts of the country.

AVMA PUBLICATIONS

Samples of the several publications of the AVMA will be displayed so that members may realize the scope of the publication program. The JOURNAL, the RESEARCH JOURNAL, the DIRECTORY, and several smaller pamphlets will be shown. These are published in response to the needs of AVMA members, and their value rises directly as their use increases.

C. N. BRAMER, J. S. BENGSTON, W. A. YOUNG

AMERICAN VETERINARY MEDICAL ASSOCIATION

An exhibit on rabies, prepared for display at the American Medical Association Interim Meeting, Cleveland; the Cleveland Health Museum; American Medical Association, Chicago; American Animal Hospital Association, Atlanta. It will be shown later at the American Public Health Association, Boston. It depicts the animals susceptible, the incidence in various parts of the country, methods of diagnosis, and control measures that have been effective.

The Commercial Exhibits at San Francisco

Following are brief descriptions of the displays which will be presented by the thirty-eight companies participating in the commercial exhibits feature of the San Francisco Convention. A wide variety of pharmaceutical and biological products, x-ray equipment, diagnostic apparatus, animal foods, books, and other professional requirements will make these exhibits of exceptional interest to veterinarians.

The exhibits will open at 9:00 a. m., Monday, August 16, and will occupy space on the first floor of the Palace Hotel closely adjacent to convention meeting rooms and activities, so that they may be viewed conveniently and frequently. Since there is no regular program on Monday morning, veterinarians and their wives are urged to take this first opportunity for a trip through the exhibit section as soon as they have registered. The exhibits will be open from 9:00 a. m. to 5:30 p. m. daily, and company representatives will be on hand during those hours to discuss their products and demonstrate their use.

The Association and the Committee on Local Arrangements express their appreciation of the fine coöperation of the exhibiting firms in this important and interesting feature of the convention.

ABBOTT LABORATORIES
Booth C-14

Such popular Abbott products as Nembutal, Pentothal Sodium, Tincture Metaphen, Prepared Intravenous Solutions, Sulfathiazole Cream, Penicillin Specialties, Sulvetil, and Abbott Vitamin Products will be on display. Abbott Laboratories extends a cordial invitation to all veterinarians to make the Abbott booth headquarters during the week of the convention.

ALBERS MILLING COMPANY
(A Division of Carnation Company)
Booth A-5

Albers Milling Company invites veterinarians to visit the Friskies Dog Food booth where it is planned to give a "live" exhibition of trimming dogs under the direction of Mr. Robert Bartos, manager of the Carnation Farm Kennels, Carnation, Wash. Literature on Friskies will also be available.

ALLIED LABORATORIES, INC.
Booths H-8 and 9

Allied Laboratories, Inc., Pitman-Moore Division, will give prominence in its exhibit to products developed by its research department, including Parenteral Solution Di-Sulfalac Stronger, an improvement on the original product, combining sulfathiazole and sulfapyridine; "Virogen," for immunization against canine distemper without the use of live virus; Mink Distemper Vaccine, Ultraviolet Irradiation-Killed; K-Pins, a device to control the action of diethylstilbestrol implants; and Sulbotab, a triple sulfonamide bolutab.

AMERICAN OPTICAL COMPANY
Booth A-2

The Scientific Instrument Division of the American Optical Company will exhibit the new Spencer Phase microscope, with a selection of objectives in dark, medium, and B-minus contrast. In addition, the pocket-size Hb-Meter (hemoglobinometer), the Bright Line Haemacytometer, and several standard microscopes of Spencer quality will also be shown.

AMES COMPANY, INC.
Booth A-6

Ames Company representatives will be glad to discuss Decholin, the standard hydrocholeretic agent for the treatment of biliary tract diseases, and Decholin Sodium, pure sodium dehydrocholate. They will be demonstrating Clinitest and Hematest—simplified tests for the detection of urine-sugar and occult blood.

BILHUBER-KNOLL CORPORATION
Booth H-4

The Bilhuber-Knoll Corporation will welcome your visits and discussions of their dependable drugs. Their display will carry such original medicinal chemicals as Metrazol—restorative and stimulant; Lenigallol—local therapy for skin diseases; Tannalbin—intestinal astringent; Calciphos—calcium therapy, and others of their useful drugs. Mr. Jack E. Schultz in charge.

BUSH ELECTRIC COMPANY
Booth B-4

The Bush Electric Company will display the new Profex Combination Table Model Radiographic and Fluoroscopic Veterinary X-Ray unit. This popular Veterinary X-Ray unit is particularly adaptable to every type of veterinary practice not alone because of the quality of radiographs produced but also because of the fact that this Table unit can be used for routine examinations.

CALO DOG FOOD COMPANY
Booth A-3

Calo Dog Food Company, Inc., will feature a product display covering Calo Dog Food and Cat Food, as well as a photographic presentation of its manufacturing processes inside the ultra-modern Calo plant in Oakland, Calif. The Calo exhibit will be presided over by the "Calo Girl" who will be glad to answer any questions about the products.

CAMERON SURGICAL SPECIALTY COMPANY
Booth A-1

See the Cameron Veterinary Diagnostoset combinations of electrically lighted instruments for Transillumination, Direct Illumination, Accurate Diagnosis, Simplified Technique and Improved Instrumentation. Outfit prices from $89.50. Cameron Electro Surgical Units for providing safe and effective cutting, coagulating, desiccating and fulgurating with quick-healing, bloodless field for veterinary surgery will also be demonstrated.

CAMPBELL X-RAY CORPORATION
Booth A-7

The Campbell X-Ray Corporation of Boston will have on display the complete machine for production and application of Animagraph X-Ray in all its phases for veterinary use in and out of the hospital.

COAST FISHING COMPANY
Booth H-10

The Coast Fishing Company booth will be an exhibit of Puss 'N Boots cat food. It is the country's leader in its field from a sales standpoint; and this has been accomplished by packing a wholesome, well-balanced fish diet which is healthful, tasty, nourishing, convenient, and most economical.

THE CORN STATES SERUM COMPANY
Booth C-3

The exhibit of The Corn States Serum Company will consist of samples of many biological products produced by the company; Grogan kennels, and specialties; also products of firms represented as distributors.

EISELE & COMPANY
Booth A-4

Eisele & Company will exhibit their complete line of Green hypodermic syringes. They will also show their veterinary thermometers, syringes and needles. They hope all their old friends in the veterinary profession will visit their booth.

FORT DODGE LARORATORIES, INC.
Booth C-9

Fort Dodge will exhibit such new biologicals as Hog Cholera Vaccine (Tissue Origin) (Boynton Method), Newcastle Disease Vaccine, Canine Distemper Vaccine in Streptococcus-Canisepticus-Typhimurium Bacterin (Can-O-Vax) and

Feline Distemper Vaccine (Homologous) (Fel-O-Vax). Also new Fort Dodge pharmaceuticals, including Penicillin Bougies, Intragel, Ringet, Gonamone, and other items of timely interest.

GAINES DIVISION—GENERAL FOODS COMPANY
Booth B-1

The makers of Gaines dog foods will have an educational display on the work of the Gaines Dog Research Center and the Gaines Research Kennels. Attendants will be on hand at the booth to answer any questions visiting veterinarians may have for them.

GOSHEN LABORATORIES, INC.
Booth C-15

Goshen Laboratories will display Goshen's Derma-Calm, Mineral Yeast, Foot Rot ointment, etc., Ciba's Coramine*, Di Ovocylin*, Perandren*, Peristalin*, etc., and products of concerns for which they act as Sole Agents: Glendale Supply's Pippin Comb, F. G. Ruder's Mange Ointment, Upham Products' Medisul**, Micro Instrument Co.'s ear trimmer and new comb, Ortho Pharmaceutical Corporation's Pre-Servisal, etc.

*T.M. Reg. U. S. Pat Off. by Ciba Pharmaceutical Products, Inc., Summit, N. J.
**T.M. Reg. U. S. Pat. Off. by Upham Products Co., New Haven, Conn.

HAVER-GLOVER LABORATORIES
Booths C-1 and 2

An attractively arranged display of interest, such as we endeavor to provide, for the AVMA meetings usually proves to be inviting to our friends in the profession. We will feature, as usual, our complete line of veterinary products, biological, pharmaceutical and surgical. We hope you will visit the Haver-Glover exhibit.

HILL PACKING COMPANY
Booth H-2

The Hill Packing Company, Topeka, Kan., will have an electrically illuminated booth and will display Hill's U.S. Inspected Frozen Horse Meat and their complete line of canned foods, including 3 new items of special interest to veterinarians. Hill Packing Co. representatives will be happy to discuss their products with veterinarians at the Convention.

JENSEN-SALSBERY LABORATORIES, INC.
Booths C-11 and 12

With new cabinet-type exhibit pieces, Jensen-Salsbery Laboratories will present items featuring new or improved products for veterinary clinicians together with surgical instruments for large and small animal practice.

THE KELLEY-KOETT MANUFACTURING COMPANY
Booth C-8

Radiography and fluoroscopy of animals is made easy and convenient with the American Electrical Animal Table being shown. A practical low cost complete unit to fit the veterinarian's needs. Operation of this x-ray unit is simple; installation for operation requires only the standard electrical outlet being employed and the unit is guaranteed by a new unique warranty.

SCHENLEY LABORATORIES, INC.
Booth C-7

The Schenley Laboratories' exhibit is devoted principally to penicillin and penicillin products. Well-informed attendants will be glad to discuss antibiotic therapy and other Schenley pharmaceuticals with veterinarians. Samples of a product for the personal use of veterinarians will be available.

SHARP & DOHME, INC.
Booth H-6

Sharp & Dohme will exhibit pharmaceutical and biological products. These will include some of the newer sulfonamides, antibiotics, "Lyovac" Brucella Abortus

Vaccine (desiccated) and other lyophilized preparations. Numerous other products of interest to both large animal and small animal practitioners will be on display.

R. J. STRASENBURGH COMPANY
Booth V-3

Sixty-two years of research in the service of veterinary medicine by the R. J. Strasenburgh Co. has produced many outstanding pharmaceuticals marketed to graduate veterinarians only. For information on most recent developments, a cordial invitation is extended to visit Booth V-3.

SWIFT & COMPANY
Booth H-7

Swift & Company again will have a colorful and informative display at the Association's annual meeting. The exhibit will feature Pard in cans and Swift's Dog Meal.

THE TECHNICON COMPANY
Booths V-1 and 2

The Technicon Company will exhibit the Autotechnicon, a machine for the automatic processing of tissues. It fixes tissues (by any method), washes, dehydrates, clears, infiltrates, and stains them, ready for mounting. Also on display will be the Scopicon, a mobile high-powered projector for microslides and color transparencies. New high-pressure mercury arc system provides ultra-intense light source for projection in wall screen, even under oil-immersed microscopic objectives. An auxiliary dark-chamber table accommodates up to ten observers for small-group study. Attachments for photomicrography, monotone or full color.

THE UPJOHN COMPANY
Booth C-4

The Upjohn Company will exhibit special selected products applicable to veterinary medicine, such as Solu-B, Gelfoam, Kaopectate, and high-potency vitamin supplements suitable for small-animal practice. Generous samples and interesting literature will be available for distribution. A representative of our Veterinary Department will be in the booth.

U. S. VITAMIN CORPORATION
Booth H-3

For the first time in pharmaceutical history . . . an aqueous parenteral solution of vitamin A . . . and an aqueous multi-vitamin preparation providing the lipoid vitamins A, D and E together with ascorbic acid and vitamin B complex factors. Also full line of veterinary vitamins and nutritional specialties; capsules, syrups and injectables.

KIRSCHNER MANUFACTURING COMPANY
Booth H-5

Veterinarians are cordially invited to see the new items that are constantly being developed by Kirschner Manufacturing Company. Some of the items on display will be the Kirschner-Ehmer Splint, Medullary Pin Kits, Mason Meta Splints, Zephyr Drying Cages.

ASHE LOCKHART, INC.
Booth C-5

Ashe Lockhart, Inc., will exhibit biological products, including antiserums, vaccines, bacterins, toxoids and diagnostic agents. Some of these are new products which will be displayed for the first time at this meeting. Material of educational value will also be displayed.

MERCK & CO., INC.
Booth H-1

The value of penicillin and streptomycin in veterinary practice will be emphasized in panel display. Literature will be available to those interested in a more detailed review on several Merck products.

NORDEN LABORATORIES
Booths C-16 and 17

On display will be original Norden Bolets, now grown to a family of eight—Quseptic, the all-purpose disinfectant, in tablet and liquid form—Lipellets, pellets that "feminize and tenderize the cockerels"—Sulfatose, improved for safer sulfa therapy—calcium products for every need—a complete line of analytically-controlled pharmaceuticals, alum-precipitated bacterins, triple-tested serum and instruments—all designed for veterinarians.

THE NORTH AMERICAN VETERINARIAN, INC.
Booth V-5

The North American Veterinarian, Inc., publishers of *The North American Veterinarian*, plan to exhibit new books: "Canine Surgery," a complete, well illustrated treatise on the subject by 25 authors: also a revised and enlarged edition of "Radiology in Canine Practice," by Dr. Gerry B. Schnelle, containing a section on Radiotherapy by Dr. Myron Thom.

THE QUAKER OATS COMPANY
Booth C-13

The exhibit will feature a display of Ken-L-Ration, a Government inspected food, made from Government inspected horse meat fully fortified, and which has had over a quarter of a century of research and test work.

RALSTON PURINA COMPANY
Booth C-6

The Ralston Purina Company exhibit will set forth the Purina policy as to the fields of service to poultry and livestock producers by the veterinary profession and the Purina organization.

SAN FRANCISCO SURGICAL COMPANY
Booth V-6

The San Francisco Surgical Co. (formerly Walters Surgical Company) will display Sharp & Dohme Pharmaceuticals as well as Schenley veterinary penicillin products. It is also our desire to display the latest operating table, but this will depend on delivery which has been somewhat slow of late. We invite members of the Association to visit our booth, also our store at 437 Sutter St., San Francisco.

VITAMINERAL PRODUCTS COMPANY
Booth C-3

Display of all raw materials used in compounding Vitamineral Products Co.'s calcium, phosphorus, vitamin and trace element supplement, which has been dispensed exclusively through the veterinary profession for more than thirty years.

WILSON & CO. INC.
Booth C-10

Wilson & Co. will exhibit Ideal Dog Food formulated according to the Wilson exclusive Balamac principle of BALanced AMino ACids. Every structure of the dog's body requires balanced amino acids, which Ideal now offers with the BALAMAC principle. (BALanced AMino ACids).

WINTHROP-STEARNS, INC.
Booth V-4

Winthrop-Stearns, Inc., will again display their original synthetic pharmaceutical introductions for veterinarians including Neoprontosil, the injectable sulfonamide; Novocain, for local anesthesia; Istizin, a non-griping laxative. In addition, Distemperoid Virus (Fromm Laboratories) for the treatment of early cases of distemper, and for immunizing dogs against distemper. The latest contribution by the Fromm Laboratories, *i.e.*, Anti-Fox Encephalitis Serum for the treatment of fox encephalitis in dogs (infectious canine hepatitis) will be shown.

A Study of the Service Area of a Veterinary Diagnostic Laboratory

NORMAN D. LEVINE, B.S., Ph.D., and ROBERT GRAHAM, D.V.M., B.S.
Urbana, Illinois

IN THE REPORT of the Committee on Miscellaneous Transmissible Diseases of the United States Livestock Sanitary Association, dated Dec. 5, 1946, it was recommended that additional veterinary diagnostic laboratories be established in the various states. In view of the fact that little information is available on the area serviced efficiently by a veterinary diagnostic laboratory, it was felt worthwhile to attempt to determine this for a typical example.

The Veterinary Diagnostic Laboratory at the University of Illinois has been in operation since 1917. It is the only state-supported veterinary diagnostic laboratory in Illinois with relatively complete facilities. It offers a diagnostic service to veterinarians and livestock men of Illinois, and it is well known throughout the state. During the fiscal year, July, 1945, to June, 1946, over 126,000 specimens, mostly blood samples, were submitted to the Laboratory for diagnosis.

An analysis was made of the Laboratory's records for the ten-year period from Jan. 1, 1937, to Dec. 31, 1946, to determine the origin of specimens sent to it for autopsy. During this period, specimens were submitted from a total of 8,664 herds and flocks in Illinois, including 458 herds of cattle, 3,800 herds of swine, 394 flocks of sheep, and 4,012 flocks of chickens. Other classes of livestock are not included in this study, since their numbers were too small to be significant.

As a basis for analysis, the following data were tabulated for each county and for each class of livestock; the number of herds from which animals were sent to this Laboratory for diagnosis; the total number of herds in the county on Apr. 1, 1940 (from the U. S. Census of Agriculture, 1945); and the airline distance from the county seat to the University of Illinois.* From this information, the number of herds from which animals were submitted for diagnosis per 1,000 herds per annum was calculated for each county. These data are shown in the maps (fig. 1 to 4). Circles are drawn on the maps at 25-, 50-, 100-, 150-, and 200-mile distances from the University of Illinois. The figures themselves are omitted because of their bulk.

In order to show in simplified form the relationship between number of specimens submitted to the Laboratory and the distance from the farm to the Laboratory, Illinois' 102 counties were divided into five groups, a geometric progression being utilized in setting up the groups. The first group contained only Champaign County in which the University is located; the second group contained three counties whose county seats were 10 to 29 miles from the University; the third group contained 17 counties whose county seats were 30 to 69 miles from the University; the fourth group contained 62 counties whose seats were 70 to 149 miles from the University; and the fifth group contained 19 counties whose seats were 150 miles or farther from the University. Thus, the range in distance for each group was double that for the previous one. The figures resulting from this grouping are given in table 1. The data on number of herds diagnosed per

TABLE 1—Relation of Distance from Laboratory to Number of Diagnoses

Dist. (miles)	Counties (No.)	Number herds diagnosed per 1,000 herds per annum			
		Cattle	Swine	Sheep	Chickens
0-9	1	4.56	35.5	20.9	45.0
10-29	3	1.67	16.9	5.82	6.79
30-69	17	0.33	4.03	1.82	1.98
70-149	62	0.12	0.93	0.52	1.18
150-319	19	0.05	0.46	1.48	1.00
TOTAL	102	0.24	2.35	1.26	2.07
State, outside Champaign County	101	0.17	1.85	0.93	1.44

Department of Veterinary Pathology and Hygiene, College of Veterinary Medicine, University of Illinois, Urbana.

*The assistance of Mrs. Betty Maunder is gratefully acknowledged for the major part of the tedious task of assembling the basic data.

1,000 herds per annum from table 1 are plotted directly against distance from the county seat to the University of Illinois in figure 5.

The figures indicate clearly that the number of specimens submitted to the Laboratory for diagnosis decreases rapidly with increasing distance from the farm to the Laboratory.

It is instructive to compare the data for Champaign County, in which this Laboratory is situated, with those for the state as a whole. The number of herds of cattle from which specimens were submitted for diagnosis per 1,000 herds per annum for Champaign County was 4.56, as compared with 0.24 for the whole state; the proportion diagnosed for the state exclusive of Champaign County was 0.17. Similar figures for swine are 35.5, 2.35, and 1.85 respectively; those for sheep are 20.9, 1.26, and 0.93; those for chickens are 45.0, 2.07, and 1.44. If the whole state were serviced as well as Champaign County, specimens from 870 herds of cattle, 5,740 herds of swine, 654 flocks of sheep, and 8,720 flocks of chickens would be submitted to the Laboratory for diagnosis each year instead of the actuality of 46 herds of cattle, 380 herds of swine, 39 flocks of sheep, and 401 flocks of chickens. Stated in another way, the proportion of herds of cattle diagnosed by this Laboratory for Illinois, exclusive of Champaign County is, 3.7 per cent of the proportion diagnosed for Champaign County alone; equivalent percentages for swine, sheep, and chickens are 5.2, 4.4, and 3.2, respectively.

Of the specimens submitted, the following percentages come from Champaign County: 29 per cent of the herds of cattle, 22.3 per cent of the herds of swine, 27.2 per cent of the flocks of sheep, and 31.8 per cent of the flocks of chickens. Champaign County and the six contiguous counties (Piatt, Douglas, Ford, Vermilion, McLean, and Edgar) account for 55.4 per cent of the herds of cattle from which specimens were submitted for diagnosis, 53.2 per cent of the herds of swine, 53.1 per cent of the

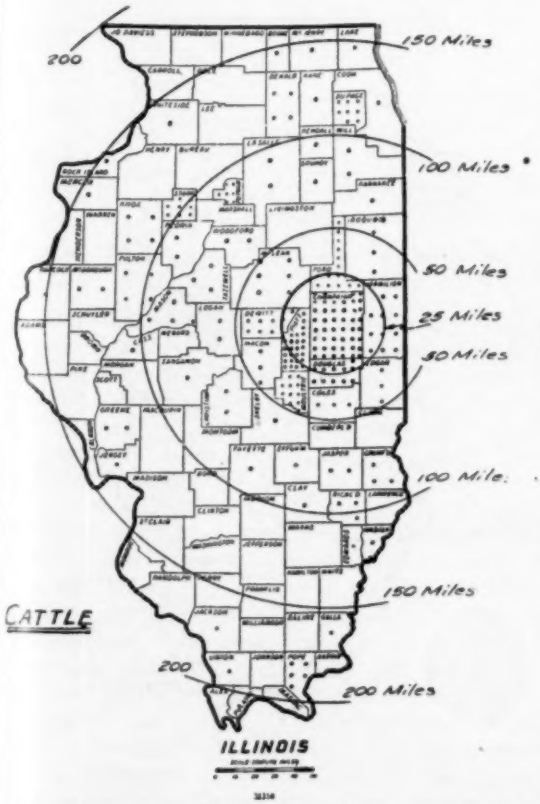


Fig. 1—Proportion of herds of cattle diagnosed for each county, 1937-1946. Each dot represents 0.1 herd per 1,000 herds per annum.

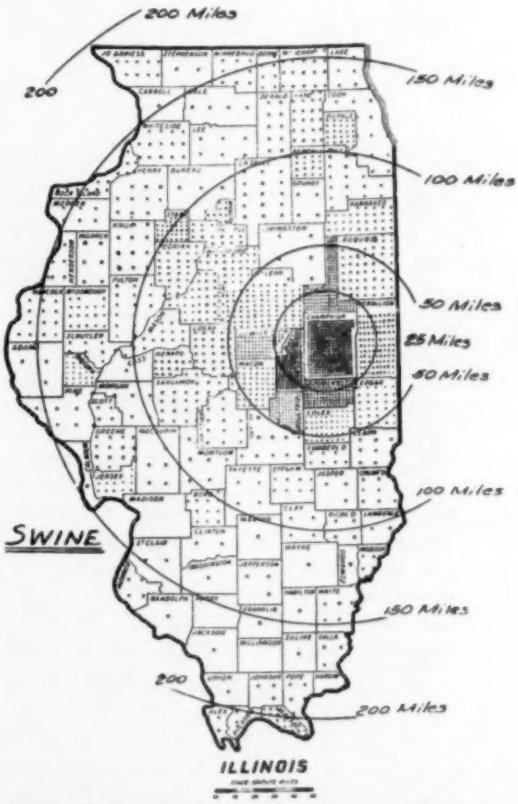


Fig. 2—Proportion of herds of swine diagnosed for each county, 1937-1946. Each dot represents 0.1 herd per 1,000 herds per annum.

flocks of sheep, and 45.1 per cent of the flocks of chickens. Thus, approximately half the specimens received came from these seven counties and half from the other 95 counties in the state.

It is of interest to note the percentages of herds and flocks from which specimens were submitted for diagnosis for each class of livestock. Specimens were received from 0.235 per cent of the herds of swine in the state each year, from 0.207 per cent of the flocks of chickens, from 0.126 per cent of the flocks of sheep, and from 0.024 per cent of the herds of cattle. These figures may be compared with those for Champaign County alone, from which specimens were received from 3.55 per cent of the herds of swine each year, from 4.50 per cent of the flocks of chickens, from 2.09 per cent of the flocks of sheep, and from 0.46 per cent of the herds of cattle. For the state, exclusive of Champaign County, specimens were received from 0.185 per cent of the herds of swine, 0.144 per cent of the flocks of chickens, 0.093 per cent of the flocks of sheep, and 0.017 per cent of the herds of cattle (table 1). These figures probably reflect, in part, the relative incidence of disease in these classes of livestock, the relative ease of transportation of the different classes, and other factors as well.

Although distance is probably the most important factor in determining the number of specimens submitted from any one county and is the only one studied herein, many other lesser ones also operate. Among these may be listed access to direct railroad lines and/or highways, presence of hard-surfaced roads, economic status of individual livestock men, the etiology and nature of the diseases encountered, and the desire of veterinarians and livestock men to utilize the facilities available for laboratory-confirmed diagnoses.

The primary purpose of this diagnostic service has not been considered to be the diagnosis of every outbreak of disease

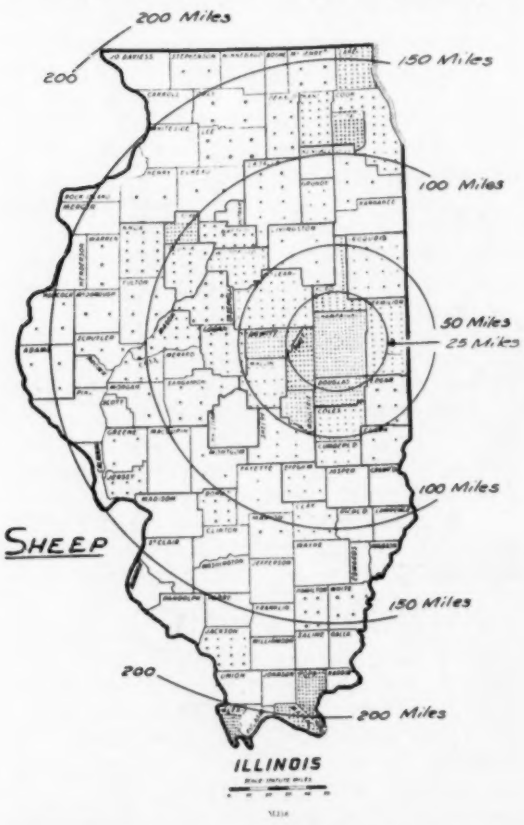


Fig. 3—Proportion of flocks of sheep diagnosed for each county, 1937-1946. Each dot represents 0.1 flock per 1,000 flocks per annum.

Fig. 4—Proportion of flocks of chickens diagnosed for each county, 1937-1946. Each dot represents 0.1 flock per 1,000 flocks per annum.

which occurs in farm herds and flocks, but rather to assist veterinarians in making correct diagnoses in cases of doubt. From this point of view, it is probable that the quality of service rendered to veterinarians

SUMMARY

A study of the records of the Veterinary Diagnostic Laboratory at the University of Illinois for the ten-year period, 1937 through 1946, showed that the number of specimens submitted for diagnosis decreased rapidly with distance of the farm of origin from the Laboratory. Specimens were received annually from 3.55 per cent of the herds of swine, 4.50 per cent of the flocks of chickens, 2.09 per cent of the flocks of sheep, and 0.46 per cent of the herds of cattle of the county in which the Laboratory is situated, and from only 0.185 per cent of the herds of swine, 0.144 per cent of the flocks of chickens, 0.093 per cent of the flocks of sheep, and 0.017 per cent of the herds of cattle of the remainder of the state.

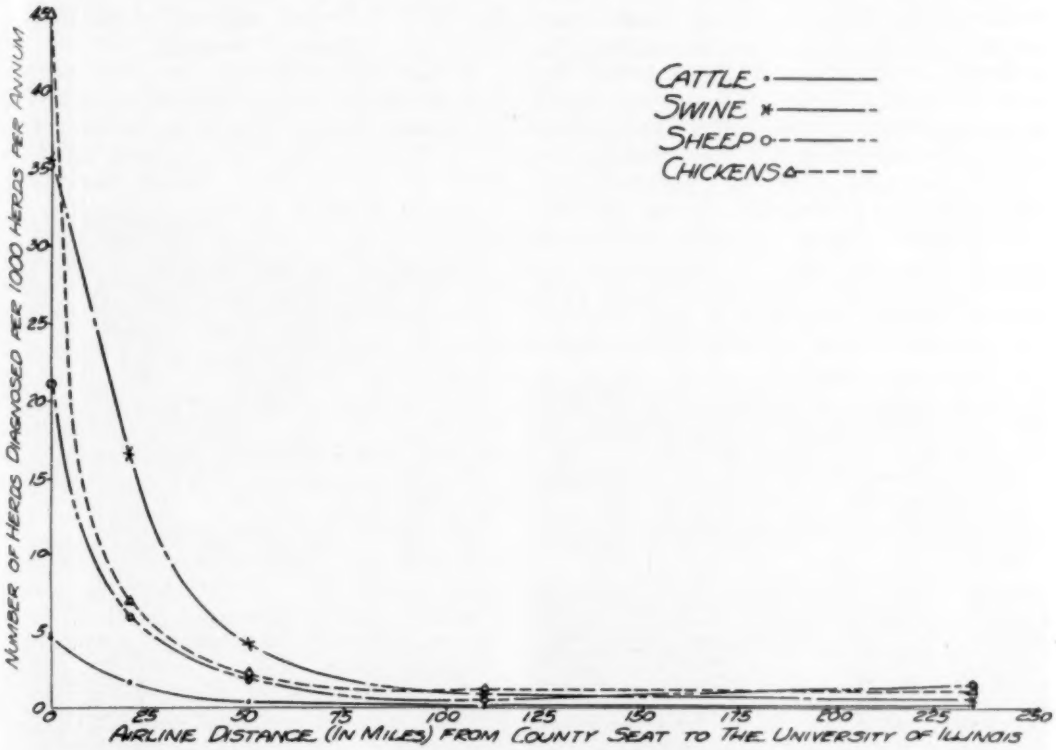


Fig. 5—Relation of distance from the diagnostic laboratory to proportion of herds or flocks diagnosed, 1937-1946. The points represent average figures taken from table 1.

and livestock owners in Champaign County is excellent, that it is satisfactory for the adjacent counties, and that as the distance increases it becomes fair to poor.

It appears doubtful that complete morbidity and mortality statistics could be compiled from the records of veterinary diagnostic laboratories if the results of the present study can be used as a criterion. Only a small percentage of the disease outbreaks which occur, even in Champaign County, are brought to the attention of this Laboratory. For example, specimens were received annually from only 3.6 per cent of the herds of swine in the County, although it is a rare farm which does not lose some pigs each year. Furthermore, since distance so markedly affects the number of animals brought to the Laboratory for diagnosis, data from other counties are even less complete.

Sleeping sickness should not be used as a popular synonym of equine encephalomyelitis. That name has long been used to designate trypanosomiasis of man in English medical and veterinary literature.

Disposal of Carcasses by Incineration

O. W. SEHER, D.V.M.
Washington, D. C.

EARLY in the Mexican-United States campaign to eradicate foot-and-mouth disease in Mexico, it developed that, should the disease be found in some of the mountainous areas, the task of promptly slaughtering and particularly burying the affected and exposed animals would be difficult if not impossible to accomplish, due to the extremely rough terrain, primitive roads, and lack of fuel. In some of these areas, the subsoil is too rocky to permit digging pits. In other areas, there may be deep soil but the primitive roads, or even the complete lack of roads, made the transportation of motorized digging equipment and supplies extremely difficult and even prohibitive especially during the rainy season.

As the farms in such areas are usually small with only a few head of livestock on each, the officials in charge of the eradication campaign proposed some method of destruction of carcasses by incineration. Two methods were proposed and experiments were conducted by the Bureau of Animal Industry at its Animal Disease Station at Beltsville, Md., to test the feasibility of each. The tests were conducted with the aid, and under the supervision, of Drs. L. O. Mott and Howard W. Johnson, veterinary technicians of the Beltsville Station, and Mr. Paul C. Brown, engineer of the Inspection and Quarantine Division.

—*USDA*

Fig. 1—Bovine carcass placed on crosspieces ready for incineration with napalm.

In the first method, incineration was accomplished by means of a chemical known as napalm applied by a flame thrower (fig. 1-3). This chemical is a stearic acid salt dissolved in gasoline, which the Army Chemical Warfare Service proposed as being the most suitable for flame-throwing equipment. This method gave an extremely hot flame when demonstrated by Army technicians, but due to the volatile nature of this material it was quickly consumed. It was determined early that excessively large quantities would be required to completely incinerate a carcass. Also, napalm was considered too dangerous to be used by men unskilled in the operation of flame throwers.

The second method, also proposed by Army technicians, was the use of a compound known in Army parlance as "goop." This material is technically referred to as magnesium dust paste, type C, and comes in 55-gallon steel drums. After the animal was placed on a few short posts (see fig. 1), the paste was deposited over the carcass (fig. 4) and ignited so as to incinerate the carcass on the ground without any digging being necessary (fig. 5). In the demonstration of the use of goop, one drum or approximately 450 pounds, was used to incinerate a bovine carcass. After being ignited and permitted to burn one entire afternoon and the following night, the carcass was only partially destroyed, leaving the head, feet, shanks, and some of the heavier muscles unburned (fig. 6). Al-

—*USDA*

Fig. 2—Carcass being ignited by flame thrower using napalm dissolved in gasoline.

Assistant chief, Inspection and Quarantine Division, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

though most of these parts could have been removed and placed on or against the carcass before the paste was applied to insure complete destruction, the cost of a sufficient quantity of the compound to effectively incinerate a carcass makes its practical use prohibitive. (The paste in this instance was obtained from Army surplus.)

In inaccessible areas where fuel is unavailable and ordinary transportation facilities cannot be employed, pits produced by blasting will need to be used. In some instances, it may be possible for destroying a few animals to transport available fuel by means of pack animals such as burros or mules, which are not susceptible to foot-and-mouth disease.

As an interesting sidelight, BAI quarantine forces stationed along the Mexican border relate that on several occasions they have been confronted with the problem of destroying smuggled and strayed animals from Mexico. They have reported good results in incinerating the carcasses in areas where wood is not available in sufficient quantities, through the use of oil and discarded auto tires placed under and around the carcasses. In these cases, however, it is necessary to have a sufficient quantity of either oil or wood to cause the tires to burn. Once started they produce an intense and lasting heat.

—*USDA*

Fig. 3—Carcass being burned after application of napalm in flame thrower.

—*USDA*

Fig. 5—Burning of carcass with the aid of "goop."

—*USDA*

Fig. 4—Bovine carcass being covered with "goop" in preparation for incineration.

—*USDA*

Fig. 6—Carcass after being burned with "goop" for eighteen to twenty hours.

Status of the Mexican Foot-and-Mouth Disease Campaign

(As of May, 1948)

A chain of carefully planned moves, well adjusted to what the Mexican public will bear, is producing noticeable, if not measurable, results in the campaign to control foot-and-mouth disease below the border. Over 2,100 civilian workers are engaged in the project, including 82 U. S. BAI veterinarians and 68 Mexican veterinarians.

Since the hard-hitting (and strongly resisted) slaughter program was abandoned several months ago in favor of a modified curb on the disease—centering on vaccination, limited slaughter, and traffic restrictions — the following developments have been sufficiently encouraging to warrant special mention by the USDA*:

1) Making extensive use of heavy equipment for road clearing, engineers have opened trails formerly inaccessible to motor transport, thereby enabling mechanized disease-fighting units to make "sweep" inspections over an area of about 50,000 square miles. These inspections furnished convincing evidence that two sections, involving about 7,000 square miles in the northern quarantine area, were free of infection and, accordingly, the quarantine line was moved down to the southern extremity of these sections (*see* the JOURNAL, April, 1948: 306, and May, 1948: 332). In the words of the USDA, "such action does not represent actual progress from an eradication standpoint but, rather, discloses that ample precautions had been taken, when previously establishing quarantine lines, to be sure that the entire spread of infection had been encompassed."

2) Between the northern and southeastern quarantine lines and the main infected areas are so-called protective lines, each approximately paralleling its corresponding quarantine line and about 10 to 50 miles from it. Each of these pairs of lines forms a buffer zone which is regarded as the key to success in halting the spread of infection. The greater part of the control forces and equipment are concentrated in these zones. Present arrangements permit the slaughter of infected and exposed animals in the buffers. Only a small number of animals have been slaughtered recently in the northern buffer, but in the southern buffer several thousands have been slaughtered—over 4,300 in March alone. In this way, small centers of infection are being stamped out before they can spread.

3) Vaccination is being employed on a rapidly increasing scale in both buffers, although up to now most of the available vaccine has gone to the northern zone. The plan is to create a belt of vaccinated animals across each zone, first at the place where the buffer meets the quarantine line and, later, to widen the belt toward the areas of actual infection. Through May, well over 100,000 doses of vaccine, obtained mostly from The Netherlands and Argentina, were used, safety-testing of which was done at a station outside of Mexico City to insure that the vaccines were free of disease-producing properties. Mexican-virus vaccines made in Europe with the aid of three U. S. BAI veterinarians (Mott, Johnson, E. A. Eichhorn) are now being shipped to Mexico. Provisions for testing the effectiveness as well as the safety of the vaccines have been made, along with subsequent safeguards against deterioration in the field.

4) Up to May 10, approximately 20 miles of a previously authorized wire fence was completed between Tamiahua on the Gulf and Tamazunchale in the State of San Luis Potosi, this area being on the eastern side of the northern buffer. Travel is heavy in this region, and it is believed that the fence will afford extra protection of the quarantine line above it.

5) The joint Mexican-United States commission announced that as of "late in April," the distance between the United States border and the nearest approach of foot-and-mouth disease was 328 miles. The quarantine line is, however, considerably closer—250 miles from the border.

6) Besides regular disinfection work conducted at quarantine-line stations, hundreds of commercial airplanes, cargo vessels, and railroad cars have been disinfected in Mexico to keep the disease from spreading to clean areas.

7) Five canning plants, set up with USDA assistance, were in operation in northern Mexico at the close of March, and together they have delivered 22 million pounds of canned meat for export. These plans give cattlemen an outlet for their surplus stock, which quarantine measures now exclude from the United States.

Not all of the developments in the new campaign have been favorable, however, and the USDA frankly pointed up these perturbing factors:

1) Over Mexico's difficult terrain, it is "a herculean task" to build even low-standard roads quickly enough to keep up with activities necessary for controlling this elusive disease.

2) There is still resistance to slaughter, now employed only in the buffer zones, notwith-

*Report on Developments in the Campaign Against Foot-and-Mouth Disease in Mexico. Bureau of Animal Industry, USDA, May 10, 1948.

standing that reportedly intensive efforts have been, and are being, made to educate owners as to the purpose of the present program and the need for it. Vaccination is likewise viewed hostilely by some owners because they either fear that vaccine will spread the disease or question its protective value on the stated ground that the United States refused to use vaccine in its own past outbreaks.

3) Mr. Juan H. Lopez, a naturalized United States citizen (of Mexican ancestry), in the employ of the U. S. BAI as a livestock inspector, was fatally shot by two men while traveling unescorted on an educational mission for the joint commission. The men admitted no enmity against the campaign and blamed their act on "their intoxicated condition." This incident raised the question of safety of disease-control employees—a question which "had been discussed on numerous previous occasions." Now, the commission has ruled that military escorts will be provided in cases where district supervisors decide they are needed.

4) The number of animals (147) that entered the United States illegally during March was nearly triple that of previous months, primarily because of drouth conditions in northern Mexico. One instance of smuggling was detected. All of these animals were killed and disposed of by burial or burning.

Prudence Island Offered for Foot-and-Mouth Disease Research

Rhode Island has taken the lead in solving the problem of where to build a United States foot-and-mouth disease research laboratory.

A congressional delegation of that state has proposed that the necessary facilities be constructed on Prudence Island in Narragansett Bay, R. I., the USDA announced May 20. Government acceptance of the site hinges on final approval by, and necessary arrangements with, state and local officials and livestock interests. The island has an area of several square miles and is ample for the 500-acre establishment needed for the research work. All things considered, Prudence Island fulfills the requirements of federal legislation (Public law 496, 80th Congress) and meets general operating needs more fully than any other available location yet proposed. The principal federal requirement is that the laboratory must be on a coastal island separated from the mainland by deep, navigable water.

Construction costs are estimated at a minimum of $25 million, annual operating costs at $2.5 million or more. The project would be staffed by about 300 employees.

H. H. Johnson Named to U.S. Foot-and-Mouth Disease Post

Mr. Harry H. Johnson, of Houston, Tex., an oil company executive, has been appointed special assistant to the Secretary of Agriculture and will be directly responsible to the Secretary for the administration of the United States part of the foot-and-mouth disease program in coöperation with the Republic of Mexico, the USDA announced May 17. He also will serve as a consultant to the chief of the U. S. Bureau of Animal Industry.

"Such an appointment has been urged by congressional leaders and several livestock groups as a means of reducing the administrative responsibilities of the technical staff and thereby increasing the effectiveness of the campaign," the agriculture department explained.

Poultry and Eggs of the U.S.A.

The *Weekly Letter* of the Institute of American Poultry Industries for Apr. 11, 1948, gives the following facts about the status of the poultry industry in 1946 and 1947:

	1946	*1947*
Chickens produced	653,403,000	660,366,000
Pounds produced..	2,724,580,000	2,753,127,000
No. consumed on farms	183,202,000	176,412,000
Lb. consumed on farms	676,202,000	653,395,000
Lb. sales, live wt.	2,287,035,000	2,146,784,000
Gross income ....$	828,970,000	$ 753,484,000
No. eggs produced	55,590,000,000	55,301,000,000
No. consumed on farms	8,026,000,000	7,828,000,000
Gross income ....$	1,728,947,000	$2,073,106,000
Over-all income ..$	2,827,932,000	$3,099,378,000

Of the over-all income, 67 per cent came from eggs, 24 per cent from chickens, and 9 per cent from commercial broilers. Seven states produced 65 per cent of the broilers: Delaware (19%), Maryland (11%), Georgia (10%), Virginia (8%), North Carolina (6%), Arkansas (6%), and California (5%).

The Utilization of Waldmann's Foot-and-Mouth Disease Vaccine in France

Since the use of Waldmann's foot-and-mouth disease vaccine along the Franco-Spanish border in 1944 and 1945, the vaccine has been more generally adopted for the prophylaxis of the disease.

The vaccine, an adsorbate of the virus on aluminum hydroxide attenuated with formalin and heat, was first used by Waldmann and his collaborators on the Island of Riems in 1938. At the same time, Schmidt, Toussieng, and Fogedby of Denmark vaccinated 5,000 cattle successfully with an identical vaccine attenuated only by heat. Thus, in 1938 there were two vaccines based upon the same principle. The German vaccine, the first to be consecrated by official experimentation in the field of practice, was given priority credit. In 1945, the Swiss made a vaccine of the Waldmann pattern, but the aluminum hydroxide employed had a faster action on sedimentation and somewhat different physical properties.

The Vaccine

Its Principle.—In the light of what is known about the special characteristics of foot-and-mouth disease virus, a vaccine has to conform to various principles.

1) Besides the three types of viruses (O, A, and C), there is a gamut of intermediary viruses in respect to pathogenic and immunizing power that have to be considered in making vaccines from these prototypes which will confer immunity against the intermediary types.

2) It must be multivalent.

3) One must work with an attenuated (and not killed) vaccine that is capable of stimulating immunity in the body. It is, therefore, necessary to find a method of preparation that removes the virulent material at an intermediary stage where the virus is not capable of multiplying to the point of causing the disease, save in inapparent form, and yet produces the specific reactions of immunity.

The adsorption of the virus on aluminum hydroxide fulfills these three conditions, especially the last one: the adsorbed virus is more "malleable" than if attenuated with heat and formalin alone.

Preparation.—The difficulty lies in obtaining large quantities of virulent material at small cost. Culture on the skin of calf fetuses (Frenkel) provides large quantities of the virus but, unfortunately, this virus was found to possess insufficient immunizing power (Danish experiments, 1938). It was therefore necessary to resort to the use of natural products: the lymph of vesicles of the tongue, gathered aseptically twenty-four hours after the inoculation of bovine animals with a highly virulent virus. Each animal gives only about 30 Gm. of virulent material.

The material is stirred and triturated in a cold mortar and then filtered for treatment with aluminum hydroxide and formalin. A pH of 9 is assured by adding a solution-tampon of glycocoll. The mixture is then submitted immediately to the action of heat: twenty-four hours at 25 C. Thus prepared, the vaccine is kept at 3 to 5 C. until delivered. Each lot is tested biologically on cattle to verify its attenuation and immunizing power.

Properties. — The vaccine is a white, milky liquid with a slight odor of formalin. Standing, it forms a white, thick, gelatinous deposit surmounted by a colorless liquid. The flasks must, therefore, be shaken before using.

The vaccine is very sensitive to variations of temperature. It should be stored where the temperature ranges from 2 to 7 C. Beyond these limits its efficacy is annihilated. If kept for more than a year within this range, the dose must be doubled; but unfortunately there is danger in overdosing because of the large amounts of aluminum hydroxide, as stated below.

Immunity is effected eight to ten days after vaccination, though certain animals are protected against contact infection after five days. In sheep, it is quite well established on the fourth to the sixth days. The duration of the immunity in cattle is from seven to nine months. It seems that there is a certain amount of intrauterine immunity conferred and that the colostrum contains specific antibodies.

The vaccination can be done in an infected area. In 1944, herds were vaccinated successfully along the French border where

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Free translation of *Le Vaccine anti-aphteux de Waldmann. Son utilisation en France.* Par M. Pierre Duvallet, *Revue de Médecine Vétérinaire, 99,* (January, 1948) : 17-22.

the disease was prevalent in the Spanish districts directly across the border. But there were many outbreaks in places where the herds had not had time to acquire vaccinal immunity. Such outbreaks, however, were not grave, most of the animals showing the disease in attenuated form—several vesicles in the mouth that disappeared in four to five days.

In 1945, many cattle developed foot-and-mouth disease two months after injection with a vaccine made in Switzerland; some of the animals contracted the infection in benign form, but many calves died. All of the sheep vaccinated developed foot-and-mouth disease, apparently from exposure to type 0 virus which had greater virulence than that used to make the vaccine.

Inoculation.—The injection must be strictly subcutaneous; deeper injection may lead to grave accidents (necrosis, persistent fistula, abscess verging on mortal septicemia) as aluminum hydroxide has an irritant action like that of turpentine. Such sequels in 1945 were caused by double doses of 1944 vaccine. In one canton the mortality was high. Large doses of the vaccine, even if correctly introduced subcutaneously, penetrate into the subjacent muscles through a phenomenon of tension or pressure. Several facts support that hypothesis: In cattle, when the injection was made in the dewlap and did not reach muscles, no such accidents occurred; and in sheep, lancing the abscess prevented necrosis and septicemia.

The postvaccinal reaction is manifested by inappetence and slight adynamia; in cows, there may be suppression of the milk secretion for several days. The vaccination does not interfere with the safety of the milk, but it may have the odor of formalin for several days. Cows vaccinated in advanced pregnancy are not harmed; 80 per cent of their calves have been found to be immunized.

Local Reaction.—If the injection is made strictly subcutaneous, one observes only a tumefaction of variable size. The inflammatory edema, painful for several days, is then resorbed more or less completely. Sometimes, a nodule persists or a fibrous formation renders the two layers of the dewlap adherent.

Posology.—The following is the official dosage:

Calves.—100 to 300 kg. (220 to 660 lb.), 20 cc.; young cattle, 40 cc.; adults, 60 cc.

Sheep and Goats.—According to size, 5 to 20 cc.

Swine.—Pigs, 5 to 10 cc.; adults, 20 to 40 cc.

UTILIZATION OF WALDMANN'S VACCINE

The prophylaxis of foot-and-mouth disease with Waldmann's vaccine can be conceived in two ways:

1) *The Country Entirely or Nearly Exempt but Threatened from Territorial Frontiers.*—Here one can immunize the animals in a zone 10 to 20 km. deep. The cost of this method is enormous: to vaccinate 245,695 animals, it was necessary to requisition 60 veterinarians and 55 assistants (students of Toulouse), and to use 5,000 liters of vaccine. It is preferable to establish protective barriers along lanes of communications and vaccinate only animals facing the troubled zone.

2) *The Country that Needs to Protect Itself Only Against Gravely Affected Centers.*—Here vaccination is associated with immediate slaughter of affected and exposed animals. Large centers of protection are created, and all new animals are vaccinated as received.

CONCLUSION

The anxiety over the question of foot-and-mouth disease prophylaxis has resolved into these general principles, thanks to Waldmann's vaccine. It remains for the laboratories to produce a more stable and a cheaper vaccine (the cost in 1945 was 2,000 francs per liter). The present epizootiology of foot-and-mouth disease is such that prophylaxis by Waldmann's vaccine can only be effective through collective action, state or regional.

Stability of Penicillin.—Although enough has been published about the deterioration of penicillin to make the user skeptical about the reliability of its therapeutic action, and no hard and fast rules account for the variability of its curative properties, there is no doubt that the commercial types of containers that fail to keep out moisture are responsible for loss of potency, independent of the element of original stability, composition, concentration, pH, and degree of purity.

If you want to know whether a good pullet is laying, notice her face: if it's red, it's a good sign. Also, her comb should be soft, warm, waxy, and red. Her beak should be bleached and white and so should the eye ring.—*Western Dairy J., Dec., 1947.*

Forssell's Operation for Correction of Cribbing

JOHN D. GADD, V.M.D.
Towson, Maryland

CRIBBING is a vice that, as I see it in my practice with Thoroughbreds, develops from idleness. The corrective operation is so radical and so new in the Thoroughbred field in my section that it is just being described in the journals. Originated and developed by Dr. Forssell of Sweden, it is described in detail in the proceedings of the International Veterinary Congress of 1934. I have used the operation mostly on mares that are in foal but, lately, I have performed it on stallions and horses in training. It has proved to be very much worthwhile. All the horses have put on weight.

Following are a few modifications, with an explanation of the anatomy and the simple way it can be done. I modify the operation in two respects, not recorded by Dr. Forssell: (1) Dissect the fascia away from its covering of the sternomaxillaris (sternocephalicus, *Sisson*) muscle, thereby retaining as much as possible which later aids in healing; (2) after closing the skin incision with interrupted mattress sutures, I put a continuous dermal suture the whole length of the incision, which runs about 20 to 24 inches, just to seal the area and to prevent secondary infection. I am indebted to Dr. James Farquharson for showing me this operation and particularly the first modification. Further, I would not be able to do it without his instruction.

The operation requires two assistants. I sometimes use only one but would rather have two. I concentrate on the dissecting, leaving the hemostasis to the assistants. All the practices used in aseptic technique should be applied rigidly. I believe that horses are more vulnerable to infection than any other domestic animal.

Presented before the Section on Surgery and Obstetrics, Eighty-fourth Annual Meeting, American Veterinary Medical Association, Cincinnati, Ohio, Aug. 18-21, 1947.

PROCEDURE

Use 7 per cent chloral hydrate solution intravenously for anesthesia; no set amount, just keep at it until the horse is anesthetized. It takes anywhere from 3½ to 4 oz. of chloral hydrate crystals in that solution to produce surgical anesthesia for the required length of time. Use sideline hobbles and sterilize the skin by scrubbing after shaving, and then cleaning with iodine and alcohol as for any other operation.

The site of intravenous injection should be lower than the site of operation. Instead of a large 14-gauge needle which was formerly used a great deal, I now use a 16-gauge needle. The chloral hydrate will run in fast enough and there will be less leakage in the area outside the vein.

You may notice, in the movie, phlebitis around one of the veins caused by the injection of chloral hydrate. It never caused any trouble. I encounter very little phlebitis from the injections and, if given correctly, paraphlebitis or phlebitis should not result from intravenous injections.

The operation is performed with the horse in a dorsoventral position, on its back with its legs in the air, with two bales of straw pulled tight on each side for support. These are covered with an ordinary blanket and another bale of straw is brought right up to the neck for the instrument table. The horse's head is in a flexed position so that the joint is not extended too far to exert pressure and develop roarers. That is important. An assistant sits with the horse's head between his legs, keeping it flexed.

An incision is made on the midline, starting 1 to 2 in. anterior of the perpendicular line formed by the posterior border of the rami of the mandible. Make an incision deep enough to go through the panniculus muscle.

When the skin and panniculus muscle are dissected back 3 to 4 in. on each side, the three involved muscles (namely, the sternomaxillaris, sternothyrohyoideus, and the omohyoideus) are exposed. The first two seen and the most developed are the right and left sternomaxillaris. They are the two that hypertrophy the most as a result of cribbing. Forssell points out that just because the muscles have not developed, it does not mean that they aren't involved in cribbing. He recommends that if there is any modification of the technique, more of the mentioned muscles should be removed. To this I agree.

The most difficult and delicate portion of the operation, for me, is dissecting out the anterior border of the omohyoideus up to its insertion on the hyoid bone. It runs down between the vena cava and the carotid artery. The anterior border is continued forward by fascia which also covers the external maxillary vein. Meticulous dissection will separate the muscle from the fascia and when this sheetlike area is held upward, light readily passes through the fascia on its anterior border. The muscle is dissected sharply from its fascia attachments and is dissected anteriorly and cut near its attachment to the hyoid bone, then followed on back where it is cut again in the region where it passes between the jugular vein and the carotid artery. Another thing that should be emphasized is sectioning of the omohyoid muscle on the medial side. The lymph vessels run on the medial side of this muscle, next to the trachea. Try to leave them alone. Don't injure them any more than necessary because they will impair the lymph circulation and lead to a lot of postoperative drainage. The posterior border of this muscle is continued by fascia which is dissected, separated, and cut off in the same way as on its anterior border.

When you cut down through the sternomaxillaris, go down alongside of its lateral border which is close to the jugular vein. Dissect the fascia off the muscle carefully. The insertion of the sternomaxillaris muscle ends with a tendon-like sheet. Section the muscle on an angle posteriorly, thereby lessening an abrupt angulation and thus retaining a more even contour of the neck. The next muscles removed are the sternothyrohyoideus muscles. These are two thin muscles which lie beneath the sternomaxillaris and border immediately on the larynx. When these muscles are removed, the skin is sutured with a mattress suture and its border sealed with a continuous running stitch. The thyroid gland is vascular and we are extremely particular in our ligations of vessels in that region. We try not to injure them.

After having tried silk and stainless steel wire, I have gone back to No. 00 catgut for ligation. It is heavy enough and has little foreign material to cause later trouble.

One of the early complications that I had, resulted from my failure to ligate effectively one of the large vessels that come off the sternomaxillaris muscle. In that case, the mare hemorrhaged for two days, but without any bad effect. Because she did not recover promptly, I gave her a blood transfusion. She had a normal foal.

It is wise to tie the horse up for four or five hours after the operation; cross tie to get less movement and less discharge postoperatively.

RESULTS

More than 75 per cent of the operations to prevent cribbing, which I have performed, have been successful. In conclusion, I may say that to obtain optimum results, all the principles of good surgical technique have to be maintained rigidly. Otherwise, any of the three muscles left intact will either continue to cause, or lead to an early return of, cribbing.

Spontaneous Recovery of a Ruptured Rectum

Coming back from a date with the stallion, the 23-year-old gray mare became melancholy and refused to eat. The physical examination disclosed a perforation in the rectum 20 cm. long, caused by improper technique used by the stallion. Because of the extent of the injury, the feces were cleaned out from the perirectal area, and the mare was sent home to die with a peritonitis. Instead of dying, the mare kept on improving, the wound healed spontaneously, and within three weeks she was able to do her regular work on the farm. —*Medycyna Weterynaryjna, 3, (1947): 813-814.*—L. I. HALLAY.

An Unusual Dentition in a Dog

On Feb. 7, 1948, while conducting the annual dairy cattle health inspection at the Jesse Lee Home (for orphans) at Seward, Alaska, I was asked to look at an 11-year-old female English Sheep dog (small) belonging to the matron of the home. The owner told me that the dog had some decayed teeth which probably should be removed. She also stated that the animal had grown a third group of teeth after 11 of the old permanent ones had been extracted when the dog was 9 years old.

Upon examination, I found that the new teeth were sound, sturdy, and bright, but the last two premolars were smaller than regular permanents (*see* fig. 1).

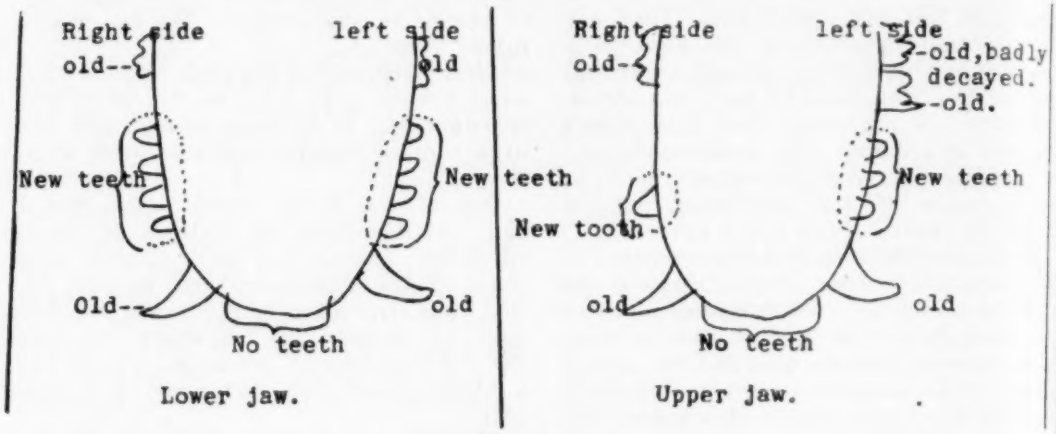

Figure 1

Some of the old permanents must have fallen out at some time in the past as but 11 had been removed manually, according to the owner. I removed the badly decayed tooth. The remaining old teeth were much discolored with receding gums, which bled easily. I advised daily washing with salt water.—*Earl F. Graves, D.V.M., Territorial Veterinarian, Palmer, Alaska.*

Sloughing and Pustules Result of Blood Transfusion in a Bull?

Last July, I was called to see an imported 14-month-old Shorthorn bull which had been down for two days. Blood smears, stained by Wright's method, revealed Anaplasma and Piroplasma in large numbers. It being the rainy season, the bull which had gone down in the pasture was drenched for several hours and the disease was complicated by pneumonia. The treatment given consisted of stimulants, sodium cacodylate and acriflavine, always with 1,000 cc. or more of saline solution and 50 per cent dextrose. In a period of twenty-four hours, the bull received 2,000,000 units of penicillin in oil, given twelve hours apart.

On the second day the temperature was subnormal and the blood had a pale, watery appearance. The bull was in a deep coma. That day, three transfusions were given from 3 different donors, 1 old bull and 2 cows. The response was immediate and soon after the last transfusion of that day, the patient stood up and drank water. A gallon of blood was obtained from the nearby slaughterhouse, citrated, and injected intravenously. This was carried out two days later whereupon the bull began to recover. No further treatment was given. The recovery was slow.

About a week later, large pieces of skin began to slough off from all parts of the body, and pustules appeared between the toes and the pasterns. The bull is still extremely thin and does not seem to progress, in spite of good care. This may be an allergic reaction to the transfused blood. We would appreciate comments.—*Emilio Estrada, D.V.M., Guatemala City, Guatemala.*

The Anticoagulant Action of Penicillin

In a concentration of 12,500 units per cubic centimeter and up, penicillin is manifestly anticoagulant. Twenty-four hours after its application, coagulation had not yet begun in trials made by Fleming and Fisch (*Brit. Med. J., abstr. Rec. Méd. Vét.*, March, 1948). The lower the concentration, the faster the clot forms. In dilutions of 340 u. per cubic centimeter, coagulation occurred in two minutes and fifteen seconds, or almost as rapidly as in the control test tubes. Iasmuch as the concentration in blood of internally administered penicillin does not approach that degree, the danger exists only in topical administration. It is, however, an action of penicillin to be taken into account in surgery.

Penicillin in Actinomycosis.—Notable results obtained from penicillin in human actinomycosis during the past three years may be worth recalling, since no evidence of its use in animals has been published. In 1945, an article in *Annals of Surgery* described 6 cases that responded to 5 to 8 million units of penicillin in six to eight weeks. Two were in soft tissue, 3 affected bones, and 1 was a generalized case. Favorable results have been reported also by the Mayo clinic (*see* JOURNAL, June, 1945: 357).

Hysterocolic Anastomasis in a Cow

Because of stormy gastrointestinal disturbances, a 10-year-old cow in the ninth month of pregnancy had to be slaughtered. The autopsy revealed that the bones of a macerated fetus had pierced the wall of the uterus and some of them were found in the colon. Several anastomoses were found between the uterus and the colon, the edges of which were completely healed. The uterus contained feces.—*Medycyna Weterynaryjna, 3, (1947): 738.*—L. I. HALLAY.

At what period of human history coition was connected with pregnancy is not known, but it was not so long ago as one might suppose. There are still tribes of primitive people like the Ingarda of Australia who believe that the child is the product of some food the mother ate.

Sow Farrows Second Time in Three Weeks

About six weeks ago, I was called to assist a sow at farrowing time. The animal delivered 3 healthy pigs and appeared to have finished farrowing. Three weeks later, the owner informed me that this same sow had farrowed again, delivering 5 healthy pigs. This is the first time I have heard of such an occurrence. The sow may have developed estrus three weeks after the first conception and may have been bred again, thus conceiving a second time.—*T. R. Eliason, D.V.M., Renville, Minn.*

Latest Pregnancy Test.—Superseding the Aschheim-Zondek test for pregnancy is a new test in which frogs are used instead of the usual laboratory rodents. The common American frog (*Rana pipiens*) is used. In two to four hours after the urine of a pregnant woman is injected into a male frog, it begins to discharge male sex cells. The method was developed by Dr. P. B. Wiltberger, a Columbus, Ohio, physician and Prof. D. F. Miller of The Ohio State University.—*From Science Illustrated.*

Time of Ovulation in Cows.—By means of rectal explorations, Beskhlebnov (abstr. *Rev. Méd. Vét.*, Feb., 1948) feels able to affirm that ovulation in cows takes place about twety-five hours after the beginning of estrus, *i.e.*, at the time that the signs of heat are disappearing. The observation showed also that ovulation occurs most frequently in the right ovary.

Urinary Calculi.—The modern concept of urinary calculi is that they form under the influence of various causes. Hyperparathyroidism, vitamin-A deficiency, and infection within the urinary channel are the principal factors leading to their formation. The surgical removal of obstructive calculi should, therefore, be followed by attention to the cause.

Talc Granulomas.—Sulfonamide dusting powder containing 35 per cent talcum applied to experimental wounds in laboratory rats caused purulent granulomas in degree corresponding to the amount of talcum used. Small amounts were resorbed without leaving any traces, while large amounts caused considerable foreign-body trouble.—*Abstr. J.Am.M.A., Feb. 7, 1948: 427.*

CLINICAL DATA

Clinical Notes

Although human cases of *Brucella melitensis* (as well as *Br. suis*) infection have been traced to hogs, there is no evidence that hogs harbor *Br. abortus*.

Experiments made by the U. S. Public Health Service indicate that steptomycin has a rickettsiostatic action that may prove of some value as an adjunctive treatment for Q fever.

Chloromycetin in Scrub Typhus.—Chloromycetin is a highly effective and apparently nontoxic treatment for scrub typhus, U. S. Army research workers told the Fourth International Congresses on Tropical Medicine and Malaria (Washington, D. C., May 10-18, 1948).

Allergy to Penicillin. — A report by British physicians (*Brit. Med. J.*, Nov. 29, 1947 : 865-866) shows that reactions to penicillin therapy may not be only remanifested following a second or repeated course of treatment but also that the reactions may become more severe with each attack.

The Worm Parasite Menace.—The death and health losses suffered from stomach worms, lungworms, flukes, nodular worms, and tapeworms in livestock continue to be tremendous, notwithstanding that science has shown the way to control most of them. In sheep, parasitisms outstrip all other diseases in importance.

Germ-free animals exist on a unique biologic level in that they have not lived with microörganisms and, therefore, have fewer immunities.

Treatment of Actinobacillosis in Sheep.—In Australian studies, weekly intravenous injections of sodium iodide or potassium iodide gave good results against actinobacillosis in sheep.—*Hayston, Australian Vet. J., March, 1948.*

Antidotes for Insecticides.—Phenobarbital and pentobarbital are genuine antidotes for benzene hexachloride poisoning in experimentally poisoned rabbits and dogs, according to reports from the Medical Division, Army Chemical Center, at Edgewood, Md. In rabbits, 20 mg./kg. was a perfect protection against lethal doses of the insecticide.

Rabbit Encephalitis from Chickenpox Virus.—At the University of Rome, about 50 per cent of a group of rabbits injected intracerebrally with varicella (chickenpox) virus developed a transmissible, lethal encephalitis.—*Biol. Abstr., Oct., 1947.*

BHC in Sarcoptic Mange of Camels.—Sarcoptic mange in camels (*Sarcoptes scabiei* var. *cameli*) responded completely to four treatments with benzene hexachloride at 10-day intervals, according to Major Omar Draz of the Egyptian army. A dilution of 0.1 per cent (in water) was used as a spray.—*J. Roy. Army Vet. Corps, Feb., 1948.*

Product F (—New Penicillin Preparation)

A new preparation of penicillin composed of procaine-penicillin C, oil of arachis, and aluminum monostearate has a lasting action in single doses that eliminates the day-and-night, every-three-hours injections required to imprison microöganisms long enough to kill them, or inhibit their pathogenic action. Product F is a thyrotropic jelly that keeps the antibiotic agent in the body longer—four days compared with the forty-eight hours claimed for the next best product of the kind. The advantage of such a product in veterinary medicine is self-evident, because much of the penicillin "shot" into animal patients in single doses represents a great deal of wasted effort and money, in view of the published dynamics of the drug.

Penicillin Infusions and Penicillin Bougies in the Treatment of Chronic Mastitis

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THE COMPARATIVE therapeutic effect of penicillin bougies and penicillin infusions* each in 50,000-unit doses, administered four times at daily intervals, was tested against chronic bovine mastitis caused by *Streptococcus agalactiae*. It is the purpose of this paper to report the results of this trial.

Many investigators including Kakavas,[1] Bryan, *et al.*,[2] Murphy and Pfau,[3] Slanetz and Allen,[4, 5] Schalm,[6, 7] Barker,[8] Murname,[9] Byrne, *et al.*,[10] Schofield,[11] and Porter and Kelman[12] have demonstrated that penicillin is an effective agent for the removal of *Str. agalactiae* from the bovine udder. The standard procedure for treatment has been to dissolve the penicillin in one of several vehicles and to infuse the solution into the infected mammary quarter.

Recently, another method for the introduction of penicillin into the bovine udder has been suggested. Bryan[13] employed 3,000 units of penicillin incorporated in water soluble wax sticks (bougies). He inserted the bougies into the teat canal and massaged them up into the milk cistern. Bryan stated that of 82 cows infected with chronic streptococcic mastitis, of which none had marked indurations, 76 cows (92.6%) became free from the streptococci, whereas 6 cows (7.3%) remained infected even after treatment had been repeated several times. Among the 76 cows that responded to treatment with the penicillin bougies, 41 cows (53.9%) required only one administration, whereas 35 cows (46.0%) needed further treatments to produce a cure. Barnum[14] used bougies containing 25,000 units of penicillin to treat 14 quarters infected with *Str. agalactiae*. Eleven quarters were treated after four consecutive milkings and three quarters after three consecutive milkings. When sampled ten days later, all of the treated quarters were free from *Str. agalactiae*. Barnum concluded that penicillin in the form of bougies compared favorably with penicillin infusions with respect to nonirritability and to penicillin milk levels.

PROCEDURE

A commercial herd consisting of about 225 lactating animals, nearly all Holstein-Friesians, was used for the trial to be described herein. All but a few of the cows were milked twice daily in a walk-through parlor in which five milking machine units were operated by one milker. No systematic attempt had been made to control mastitis in this herd during the previous eighteen months. When clinical mastitis developed in a quarter, the usual practice was to leave the involved quarter unmilked. As a result of this practice, an unusual number of quarters was found to be partially or completely atrophied.

Composite milk samples were drawn from all lactating cows in the initial survey. The cows found to be infected with *Str. agalactiae* were segregated and maintained as an isolated group throughout the trial. Individual quarter samples were then collected from the infected animals in order to determine which quarters were harboring *Str. agalactiae*. On the day that the first treatments were given, quarter samples were again taken to verify the previous bacteriologic findings.

The bacteriologic procedures consisted of the Hotis test, the microscopic study of stained smears prepared from incubated Hotis samples, the study of colony charac-

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The authors express their appreciation to Dr. N. H. Casselberry for aid in experimental arrangements, to Patricia Cochran for making the penicillin assays, and to Hazel C. Drew for assistance with the bacteriologic work.

*The penicillin in the form of bougies and for the comparative infusion method was contributed by Cutter Laboratories, Berkeley, Calif.

teristics resulting from streaking a loopful of the incubated Hotis sample on Edward's medium, the isolation of colonies typical of *Str. agalactiae*, and the verification of this organism by reactions in sodium hippurate broth, esculin broth, litmus milk, lactose, sucrose, salicin, mannite, raffinose, inulin, trehalose, and sorbital. The interpretation of the reactions obtained in differential mediums has been described elsewhere.[15, 16]

A group of 21 cows having a total of 46 quarters infected with *Str. agalactiae* was available for treatment. The milk was abnormal in 32 of these quarters and 43 quarters displayed some degree of induration and/or atrophy. The infected quarters were divided into two comparable groups of 23 quarters each on the basis of symptomatology and production. When more than one quarter was infected on a given cow, they were all treated with the same type of penicillin administration. There was an exception made to this rule in the case of cow 212. This animal exhibited advanced symptoms of mastitis in all of its quarters. It appeared that it would be unfair to treat all of these quarters by a single method of penicillin administration; therefore, two quarters were treated with penicillin in the form of bougies and two quarters were treated with penicillin in the form of infusions.

The bougies employed in this trial were prepared from polyethylene glycol or carbowax and each contained 50,000 units of potassium penicillin. The bougie was 3 mm. in diameter, 25 mm. in length, and one end was tapered. The bougies were supplied to us in screw-capped vials containing four bougies each. Each bougie was protected so that it could be removed from the package and inserted without touching it with the hands. By grasping the teat as in the act of milking, the teat orifice dilates and a small amount of milk is forced out. This serves as a lubricant for insertion of the bougie.

For the infusions, penicillin calcium was dissolved in triple distilled water immediately before use. Each infusion consisted of 50 cc. containing 50,000 units of penicillin. Treatments with either penicillin infusions or with the penicillin bougies were administered after the morning milking on four consecutive days. Milk samples were drawn for bacteriologic study six times at weekly intervals after completing the penicillin treatments.

The concentration of penicillin per cubic centimeter of foremilk was determined for

TABLE I—Therapeutic Effects of Penicillin Bougies (50,000 Units) in Quarters Infected with Streptococcus Agalactiae

	Pre-treatment			Post-treatment											
				1st week		2nd week		3rd week		4th week		5th week		6th week	
Cow	Strip cup	Palpation	Str. ag.	Strip cup	Str. ag.	Strip cup	Str. ag.	Strip cup	Str. ag.	Strip cup	Str. ag.	Strip cup	Str. ag.	Strip cup	Str. ag.
91LF	N	aS	+	N	—	N	—	N	—	N	—	N	—	N	—
113LF	W	aS	+	N	—	N	—	N	—	N	—	N	—	N	—
LR	pus	Swollen	+	clots	—	W	—	W	—	W	—	N	—	N	—
121LF	pus	aD+	+	N	—	N	—	N	—	N	—	N	—	N	—
137RF	pus	aD+	+	W	—	W	—	N	—	N	—	N	—	N	—
RR	pus	D+	+	N	+	W	+	N	+	N*	—	N	—	N	—
180RR	N	S	+	N	—	N	—	N	—	N	—	N	—	N	—
LF	pus	D+	+	W	—	W	—	N	—	N	—	N	—	N	—
LR	pus	M	+	N	—	W	—	N	—	N	—	N	—	N	—
201RF	W	N	+	N	—	N	—	N	—	N	—	N	—	N	—
RR	pus	D+	+	N	—	N	—	N	—	N	—	N	—	N	—
LF	W	N	+	N	—	N	—	N	—	N	—	N	—	N	—
LR	W	aN	+	N	—	N	—	N	—	N	—	N	—	N	—
204RF	N	N	+	N	—	N	—	N	—	N	—	N	—	N	—
RR	W	S	+	N	—	N	—	N	—	N	—	N	—	N	—
LR	W	S	+	N	—	N	—	W	—	N	—	N	—	N	—
209RR	pus	D+	+	flakes	+	pus	+	pus	+	N*	+	W	+	N	+
LR	W	aD+	+	N	—	N	—	N	—	N	—	N	—	N	—
211LR	W	AS	+	W	—	W	—	W	—	W	—	N	—	N	—
212RF	pus	D+	+	pus	—	pus	+	pus	+	W & pus*	—	W	—	dry	—
LF	pus	M	+	pus	+	pus	+	pus	+	W & pus*	—	W & pus	—	dry	—
206RF	N	S	+	N	—	N	—	N	—	N	—	N	—	N	—
LR	N	D	+	N	—	N	—	N	—	N	—	N	—	N	—

*Retreated with penicillin bougies. N=Normal. S=Very light or questionable induration. D=Slight induration. D+=Distinct induration. M=Marked induration. a=Slight shrinkage. A=Marked shrinkage. W=Watery.

each quarter at twelve and twenty-four hours after treatment. The twelve-hour samples were secured for assay before the evening milking following the first administration of penicillin in the series, whereas the 24-hour samples were drawn before the morning milking immediately prior to the third treatment. The twelve-hour assays were made by the cup plate method, whereas the 24-hour penicillin levels were determined by the Rammelkamp[17] serial dilution method.

RESULTS

It is shown in tables 1 and 2 that, of the 46 quarters treated with either the infusions or the bougies, 38 quarters (82.6%) ceased to shed *Str. agalactiae* and remained free from this pathogen throughout the six weeks during which the cows were kept under observation. Eight quarters (17.4%) remained infected. Four of these quarters had been treated with bougies and four had received infusions. These eight infected quarters were retreated three weeks later and all but one ceased to shed *Str. agalactiae* during the remainder of the trial. This one quarter in which the infection persisted was in the bougie-treated group.

Immediately before administering the first treatments in the series, milk samples were taken in order to check the previous bacteriologic findings. It was proved from these samples that each quarter selected for treatment was shedding *Str. agalactiae* at the time the first administration of penicillin was made. In addition, it was found that five quarters that had previously been negative for *Str. agalactiae* were shedding at that time. However, the treatment of the quarters originally selected had been completed before this information was available. These five quarters were then treated with bougies four times at daily intervals the following week and *Str. agalactiae* was not subsequently found in them; this data is not included in the tables. Also, two other quarters not previously detected as infected became positive for *Str. agalactiae* during the post-treatment period. They also were treated with bougies and they were subsequently negative for *Str. agalactiae.*

The penicillin levels in the foremilk at twelve and twenty-four hours after treatment are shown in table 3. Twelve hours

TABLE 2—Therapeutic Effects of Penicillin Infusion (50,000 Units) in Quarters Infected with Streptococcus Agalactiae

	Pre-treatment			Post-treatment											
				1st week		2nd week		3rd week		4th week		5th week		6th week	
Cow	Strip cup	Palpation	Str. ag.	Strip cup	Str. ag.	Strip cup	Str. ag.	Strip cup	Str. ag.	Strip cup	Str. ag.	Strip cup	Str. ag.	Strip cup	Str. ag.
84LF	pus & W	D+	+	N	—	N	—	N	—	N	—	N	—	N	—
118LR	N	D+	+	N	—	N	—	N	—	N	—	N	—	N	—
125RF	pus	D+	+	N	—	N	—	N	—	N	—	N	—	N	—
RR	pus	D+	+	flakes	—	N	—	N	—	N	—	N	—	N	—
LF	pus	D+	+	clots	—	N	—	N	—	N	—	N	—	N	—
LR	pus	Swollen	+	N	—	N	—	N	—	N	—	N	—	N	—
126RR	N	S	+	N	—	N	—	N	—	N	—	N	—	N	—
LR	W	S	+	N	—	N	—	N	—	N	—	N	—	N	—
181RF	N	S	+	N	—	N	—	N	—	N	—	N	—	N	—
RR	pus & W	D+	+	flakes	—	N	—	N	—	N	—	N	—	N	—
LF	N	S	+	N	—	N	—	N	—	N	—	N	—	N	—
LR	W	D+	+	N	—	W	—	N	—	N	—	N	—	N	—
202LF	pus	D	+	N	—	N	—	N	—	N	—	N	—	N	—
LR	W	D+	+	N	+	N	+	N	+	N*	—	N	—	N	—
203RF	N	N	+	N	+	flakes	+	N	+	N*	—	N	—	N	—
RR	N	S	+	N	—	N	—	N	—	N	—	N	—	N	—
LF	W	aD+	+	W	—	W	—	N	—	W	—	dry	—	dry	—
LR	N	S	+	N	—	N	—	N	—	N	—	N	—	N	—
212RR	pus	M	+	pus	—	pus	+	pus	+	W & pus*	—	N	—	dry	—
LR	pus	M	+	pus	+	pus	+	pus	+	W & pus*	—	W	—	dry	—
214LF	N	aD	+	N	—	N	—	N	—	N	—	N	—	N	—
154RF	pus	S	+	N	—	clot	—	N	—	N	—	W	—	W	—
156RF	N	AN	+	N	—	W	—	N	—	N	—	W	—	N	—

*Retreated with penicillin bougies. N=Normal. S=Very slight or questionable induration. D=Slight induration. D+=Distinct induration. M=Marked induration. a=Slight shrinkage. A=Marked shrinkage. W=Watery.

after the administration of penicillin, the levels of penicillin in the foremilk from quarters receiving infusions ranged from 6.4 to 80.0 units/cc. with an average of 27.4 units/cc., whereas in the bougie-treated quarters the spread was from 5.0 to 80.0 units of penicillin/cc. of foremilk with an average of 41.13 units/cc. In most instances, the penicillin concentration in the twelve-hour sample was inversely proportional to the secretory activity of the quarter. At twenty-four hours after treatment, the infusion-treated quarters averaged 1.67 units of penicillin/cc. of foremilk and the bougie-treated quarters averaged 1.90 units of penicillin/cc. of milk. These latter levels represent residual penicillin which remained in the glands after they had been milked twelve hours previously.

In order to obtain data on the distribution of the penicillin throughout the milk, 2 noninfected cows were treated in all quarters with the bougies, and seven days later the same cows were treated in all quarters with 50,000 units of penicillin in 50 cc. of triple distilled water. The results of this trial appear in table 4. It was found that the average concentration of penicillin in foremilk, midmilk, and strippings did not vary significantly in the two forms of penicillin therapy administered to cow 1341, which was producing about 12 lb. of milk in twelve hours, whereas with cow 1401, which was producing about 5.5 lb. of milk in twelve hours, the bougies produced the higher penicillin levels. The penicillin levels in the foremilk and the strippings from both cows in both forms of treatment were slightly higher than in the midmilk.

DISCUSSION

Bryan[13] and Barnum[14] used bougies containing 3,000 and 25,000 units of penicillin, respectively. In the current trial the bougies contained 50,000 units of potassium penicillin. This dosage was in conformance with the previous recommendations by one of us[7] for the treatment of chronic bovine mastitis caused by *Str. agalactiae.*

In the studies reported by both Bryan[13] and Barnum[14] on the use of penicillin bougies in the treatment of mastitis, the clinical material selected for treatment did not represent well-advanced cases of chronic mastitis. In contrast to this, the majority of mammary quarters included in our in-

TABLE 3—A Comparison of the Penicillin Levels in the Foremilk at Twelve and Twenty-four Hours after Treatment with Penicillin Either in the Form of Infusions or Bougies

Penicillin infusions 50,000 units						Penicillin bougies 50,000 units					
			Units of penicillin per cc. foremilk		Comparative production of each treated				Units of penicillin per cc. foremilk		Comparative production of each treated
Cow	Milk lb./day	Qtr.	12 hr.[1]	24 hr.[2]	quarter[3]	Cow	Milk lb./day	Qtr.	12 hr.[1]	24 hr.[2]	quarter[3]
84	34.7	LF	19.0	2.5	S	91	26.4	LF	56.0	5.0	S
118	34.0	LR	25.0	2.5	N	113	23.0	LF	41.0	2.5	N
125	5.4	RF	32.0	2.5	D			LR	80.0	5.0	D
		RR	30.0	0.31	D	121	17.6	LF	80.0	5.0	S
		LF	80.0	2.5	S	137	36.7	RF	15.0	1.25	S
		LR	23.0	1.25	N			RR	7.5	0.625	D
126	18.2	RR	13.0	0.625	N	180	22.3	RR	16.0	1.25	N
		LR	8.0	0.078	N			LF	80.0	2.5	B
154	29.4	RF	35.0	2.5	D			LR	20.0	0.31	D
156	14.8	RF	34.5	5.0	S	201	18.1	RF	5.1	0.078	N
181	20.0	RF	13.0	0.31	D			RR	24.0	0.31	S
		RR	75.0	5.0	B			LF	23.0	0.31	D
		LF	14.5	0.625	D			LR	23.0	1.25	N
		LR	6.5	0.0	N	204	18.7	RF	75.0	0.31	N
202	33.3	LF	6.4	1.25	S			RR	27.0	2.5	N
		LR	80.0	2.5	D			LR	80.0	0.625	S
203	23.7	RF	9.8	0.156	N	206	17.5	RF	37.0	0.625	D
		RR	13.4	0.078	D			LR	60.0	0.625	D
		LF	32.0	5.0	B	209	38.2	RR	5.0	0.0	S
		LR	16.0	0.078	N			LR	8.4	1.25	N
212	23.8	RR	18.5	2.5	D	211	12.4	LR	80.0	5.0	B
		LR	13.4	0.625	N	212	23.8	RF	38.0	2.5	N
214	29.2	LF	34.0	0.625	D			LF	65.0	5.0	D
Total	266.5		632.0	38.51			254.7		946.0	43.818	
Ave.	24.22		27.4	1.67			23.15		41.13	1.905	

[1]Cup plate method of assay. [2]Rammelkamp serial dilution method of assay. N=Volume of milk probably not affected. D=Decreased secretion. S=Scanty secretion. B=Blind or nonfunctional.

vestigation exhibited well-advanced infections. Abnormal milk was present in 69.6 per cent of the quarters and indurations and/or atrophy were present in 67.4 per cent of the quarters. The clinical material

TABLE 4—Comparison of the Penicillin Levels in Foremilk, Midmilk, and Strippings from Two Normal Cows Twelve Hours After Treatment of All Quarters with 50,000 Units of Pencillin in the Form of Bougies, Followed a Week Later by Treatment with 50,000 Units of Penicillin in the Form of Infusions

Cow	Treatment	Penicillin, units per cc. Average of four quarters			Lb. milk in udder 12 hr. after penicillin administration
		foremilk	midmilk	strippings	
1341	Bougie	23.50	21.75	28.00	12.9
	infusion	30.15	17.85	29.65	12.0
1401	Bougie	36.50	27.75	33.25	5.4
	infusion	28.20	19.55	19.60	5.5

therefore provided an unusually stringent test of the efficacy of penicillin in the form of bougies *vs.* penicillin in the form of infusions in the therapeusis of *Str. agalactiae* infections.

In so far as the ease of insertion of the bougie into the teat canal is concerned, it is necessary to point out that of the 23 quarters treated with bougies, three quarters in the group had teat openings into which the bougies were inserted only with difficulty and with discomfort to the cow. In addition, one quarter that had been placed in the group for treatment with bougies had to be changed to the group that received infusions for its teat canal was too small to receive the bougie. Our experience suggests that a bougie of smaller diameter than 3 mm. would be desirable to overcome the difficulty of insertion into certain teats.

CONCLUSION

The results of this trial indicate that penicillin bougies containing 50,000 units of penicillin are as efficacious as penicillin infusions consisting of 50,000 units in 50 cc. of distilled water for the removal of *Streptococcus agalactiae* from the bovine udder when administered four times at intervals of twenty-four hours.

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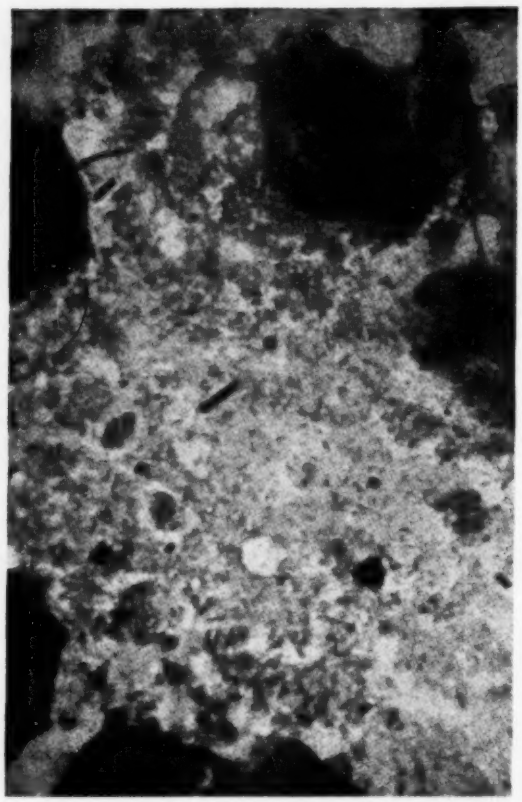
B(acillus), C(almette), G(uérin).—The prestige of BCG has advanced to such an extent through extensive trials in important centers of population throughout the world that French scientists have proposed the holding of an international congress where all of the facts concerning antituberculosis vaccination may be pooled and discussed. Guérin, alumnus of Alfort, and an outstanding veterinary laboratorian, is vice president of the *Académie Vétérinaire de France.*

Treatment of Acute Mastitis.—For valuable dairy cows with acute mastitis, a desirable way to administer penicillin is in beeswax and peanut oil. The dosage is 3 million units every twelve hours for a 1,200-lb. cow. Discontinue treatment after the temperature has remained normal for twenty-four hours.—*Dr. A. G. Danks before the U. of Ill. Vet. Conf., Oct. 6-9, 1947.*

Pernicious Anemia in Dogs

The grave macrocytic anemia of man, known as pernicious or Addison's anemia, though never before included among the diseases of animals, is described with graphic illustrations as a special entity of dogs.* It is characterized by a definite syndrome: fever, inflamed mucosae, colored urine and sometimes albuminuria, purpura,



—After Buzenac, 1948

Photomicrograph of a section of the liver of a dog that was affected with pernicious anemia following an attack of piroplasmosis. x 900. One of five micro-illustrations of the article.

icterus, and splenomegaly, alone or in combination. The intestinal, pulmonary, and nervous manifestations may be too vague to detect, clinically. As the disease evolves in connection with, or following, general microbial or parasitic infections, it is thus disassociated (hidden) as a special entity and dealt with as a continuation of the original trouble.

The author recognized the malignant nature of the fever most often at the termination of attacks of piroplasmosis. The anemic state was ushered in by accelerated respirations, diarrhea, anorexia, cough, trembling, temperature above 40 C. (104 F.), pale mucous membranes, dark urine containing blood elements, and pronounced asthenia. If the attack lasted fifteen days, there was great loss of flesh, cachexia, and death in a moribund state. The duration ranged from ten days to four weeks. When the pernicious anemia followed ailments other than piroplasmosis, the same impressionable syndrome ensued. The organic complications which are habitually curable were transformed into a grave or mortal disease. Liver extracts, arsenicals, sulfonamides, penicillin, iodides, and serums were ineffective.

The rôle of *Clostridium welchii* and/or *Clostridium perfringens*, isolated in the course of this study, were passed off as organisms, commonly present, that propagated at the propitious moment. In short, the author asserts there is a *pernicious anemia of the dog* comparable in important respects to the macrocytic, hyperchromic, achrochloric, degenerative complex of that name in the human being.

*Jean Buzenac, Lyon, France: *Une anémie infecteuse du chien: l'anémia perniceuse.* Rec. Méd. Vét., *124*, (March, 1948): 111-123.

Bots Not Toxic

A critical study of *Gasterophilus intestinalis* attached to the gastric mucous membrane of solipeds (*abstr. Rev. Applied Entomol.*, Feb., 1948) failed to show that the larvae exert any toxic action on the host. The damage inflicted is ulcerous not toxic. Aqueous extracts of the larvae at a dilution of 1:10 by weight were injected into rabbits intravenously and intraperitoneally in 10-cc. doses on alternate days for a month. The injections caused no toxic symptoms, no anaphylactic reactions, and no modification of the erythrocytes. A slight eosinophilia in the peripheral blood and marrow were the only effects observed.

The laying house mortality of chickens in 1947 was 17.9 per cent of the number of hens on hand Jan. 1, 1948, an increase from 17.4 per cent in 1946. The cause of the increase is attributed to forced feeding for higher production.—*From Weekly Letter, Institute of American Poultry Industries.*

A Decrease in Egg Production Following Sulfamerazine and Sulfamethazine Medication

During a recent field trial to determine the value of sulfamerazine and sulfamethazine in endemic fowl cholera in a flock of laying hens, the apparent effect of the drugs upon the egg production was sufficiently marked to warrant attention. The therapeutic value of these drugs upon the fowl cholera infection in the flock will be reported elsewhere.

The flock consisted of 1,101 chickens which were housed in a long shed-roof type of building divided into 12 pens. In so far as could be determined by inspection, all pens were on a par from a health standpoint. The owner had not previously kept account of the egg production by pens, but this data was recorded for the duration of the observation period following the initiation of sulfonamide treatment.

The chickens were treated as follows: Pens 1 and 3 containing 189 chickens were given sulfamethazine in the mash; pens 5 and 6 containing 121 chickens were given sulfamerazine in the mash; pens 8 and 9 containing 184 chickens were given sodium sulfamethazine in the drinking water; and pens 11 and 12 containing 177 chickens were given sodium sulfamerazine in the drinking water. Four pens, 2, 4, 7, and 10, were left untreated. By this arrangement, there were scattered through the long house eight pens comprising 671 chickens which received medicated mash or water, and four pens comprising 430 chickens which served as untreated controls. The medicated mashes contained 0.5 per cent of the drug and were fed for six days. The soluble sodium salts of each drug were employed in the drinking water at the rate of 40 Gm./5 gal. of water (0.2%) which was furnished to the birds *ad libitum* for three days. The plan had been to give the medicated water, like the medicated mash, for six days and the amount of the drugs believed ample to last for that period was left with the owner. Due to increased water consumption resulting from unusually warm weather the drugs lasted only three days and the owner did not advise us of this fact.

From the data in figure 1, it can be readily seen that both drugs, when administered in either mash or water in the concentrations used, had adverse effects upon egg production. The period of lowest egg production in all four treated groups occurred between the seventh and ninth days.

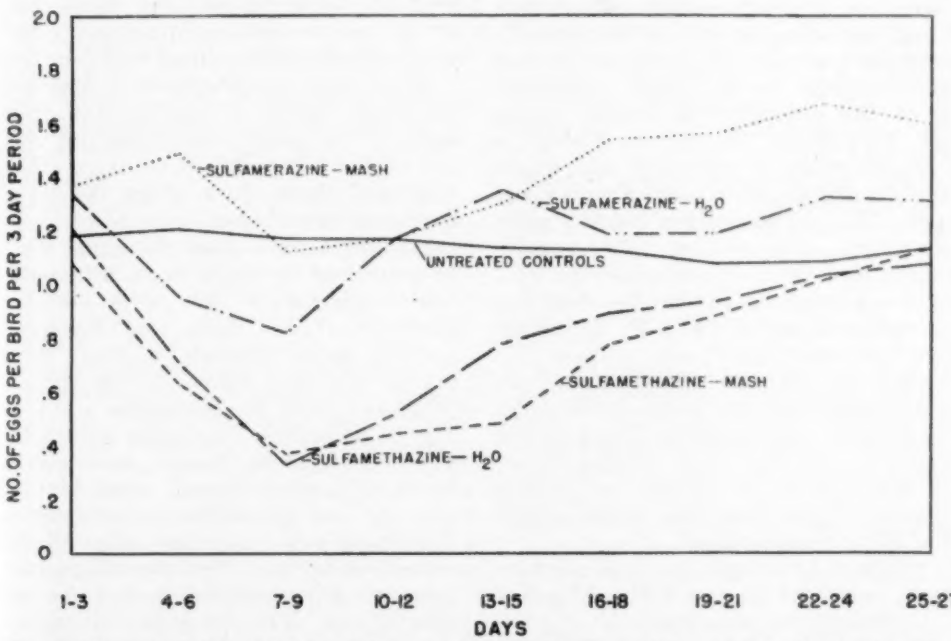


Fig. 1—Effect of mashes containing 0.5 per cent sulfamethazine, or 0.5 per cent sulfamerazine given for six days and drinking water containing 0.2 per cent sodium sulfamethazine, or 0.2 per cent sodium sulfamerazine given for three days upon the egg production of a laying flock.

Sulfamethazine appeared to have a greater detrimental effect than sulfamerazine. The toxic effect of sulfamethazine as indicated by the egg yield of the birds was as profound and lasting when given in the water for three days as when given in the mash for six days. Sulfamerazine appeared to affect egg production considerably less than sulfamethazine. Also, it appeared to be tolerated better when given in the mash for six days than in the water for three days. It appears possible, however, that this difference in effect from the two methods of administration might not have been observed if the total intake of the drug in water had been distributed over a six-day period as had been planned.

The rate at which the birds returned to their normal egg production also varied with the drug employed, being approximately two weeks from the first day of treatment for the sulfamerazine treated groups and three and one-half weeks for the groups given sulfamethazine.—*R. A. Bankowski, D.V.M., Ph.D., University of California, Berkeley.*

Rheumatic Fever in Cats

On February 14, a 2-year-old cat which had been treated the previous winter for panleucopenia by another veterinarian was presented for examination. The animal's temperature was 105 F.; there seemed to be extreme pain in the lower chest, the region of the stomach and lateral to the kidneys. In view of the previous history, a tentative diagnosis of pleurisy was made, and the possibility of a renal abscess was explored. The cat was given 100,000 units of penicillin in wax, 6 cc. of feline specific antiserum, and 2 cc. of gomenphor.

The owner returned the cat the next day with a temperature of 104.5 F., continued extreme low chest pain, and kidney pain particularly on one side. Both places were extremely sensitive. Dextrose, administered subcutaneously, was added to the previous treatment; a liniment was applied to the kidney region in the belief that an abscess was present; buchuform was administered and the animal hospitalized.

For the next two days, the patient's temperature remained at 104.5 F. The previous treatment was continued.

On the fifth day, I thought I could discern a pointing at the side of one kidney and tapped this region with a sterile syringe. Liquid fat and a small amount of free blood (about 3 cc.) was aspirated and a smear made of the exudate. The laboratory returned a negative report. By this time I had decided that the chest pain was coming from the heart region. Two days earlier, a male cat had been admitted with identical symptoms and was being treated in the same manner.

A diagnosis of rheumatic fever was made in both instances, and upon advice of the pathologist, 30 gr. of sodium salicylate was given to each cat. Both animals vomited for the first time, and the second cat, which had been eating, refused food. The dose was cut to 10 gr. On the sixth day of illness, the first animal died. Autopsy disclosed a grossly normal kidney with the free fat apparently coming from a point beside the kidney and lateral to the longissimus dorsi muscle. The heart was enlarged, markedly, on the right side. The right atrioventricular valve was thickened slightly on one cusp with a minute cauliflower growth. A section was examined and streptococci found. They were not long-chained, but this could be traced to a poor preparation.

Upon the second day of 10-gr. salicylate treatment, the second cat's temperature returned to normal and remained there during the two and one-half weeks the cat was kept for observation. The pains lessened but did not completely disappear until several days after the animal was sent home.

Since then, I have made a diagnosis of rheumatic fever in another cat upon the basis of the above symptoms and the failure of the temperature to drop. This cat recovered three days after the salicylate treatment was begun.

I think I have seen the same condition in a number of young dogs, although positive confirmation has never been made. However, I have made that diagnosis, according to my records, on four occasions during the past year. All of these cases recovered with the exception of 1 animal which apparently has some spinal lesions, as it occasionally has a mild convulsion upon extra exertion and some arthritis in one leg and the adjacent lumbar region. This diagnosis was made when the animal was 4 weeks old. The other diagnoses have been made in puppies from 6 weeks to 3 months old. The symptoms are nearly the same, although not as pronounced, as in the cats I have seen.—*Don E. Ward, D.V.M., Santa Ana, Calif.*

Lead Arsenate for Removal of Ruminant Tapeworms

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THE USE of lead arsenate as an anthelmintic is in the experimental stage. Moreover, studies of this treatment appear to have revealed new information on the pathogenicity of ruminant tapeworms, *Moniezia expansa* and *M. benedeni*. Accordingly, the aims of this discussion are (1) to outline the background of the lead arsenate treatment; (2) to enumerate the problems that should be solved before the treatment may be regarded as having progressed beyond the experimental stage; and (3) to review the evidence that tapeworms may, under special circumstances, cause losses in range and farm stock.

Historical Background of Lead Arsenate Treatment

The first trials of lead arsenate as a ruminant teniacide were carried out by McCulloch and McCoy[4] of Washington State College These investigators administered 0.5-Gm. doses of the chemical (spray grade) to 555 lambs that were unthrifty, diarrheic, and passing tapeworm segments. Earlier treatment of some of these lambs with 24-Gm. doses of phenothiazine had not improved their clinical condition. The lead arsenate treatments were well tolerated, large numbers of tapeworm segments were expelled, and the lambs improved in weight and general condition. The trials, however, were not designed to give critical data on the efficacy of the treatment.

No specific reason was given for the selection of lead arsenate for teniacidal trial in the above instance, although shortly before the tests were carried out this chemical had been reported[2, 3] by workers of the U. S. BAI to have teniacidal action in chickens. It proved to be too toxic for practical use in poultry.

The most extensive experience with the lead arsenate treatment was reported by Radeleff[7] of Kerrville, Texas. His report listed the treatment of 1,158 lambs with 0.5-Gm. doses of the spray-grade chemical, 2,072 kids with similar doses, 131 calves with doses of 0.5 and 1 Gm. (the smaller dose for those under 3 months and the larger for those from 3 to 6 months), and 4 cows with doses of 2 Gm. each. The flocks and herds from which these animals were selected had suffered losses attributed to tapeworms. The treatments were generally well tolerated, removed large numbers of tapeworms, and were followed by improvement of the animals and reduction of losses. In one flock of 125 kids to which the chemical was given, 2 animals died within twenty-four hours after treatment. The medication was not considered responsible for this result, however, since the kids were already in such poor condition at the time of treatment that they were unable to stand. The chief evidences of intoxication were encountered in calves. These animals developed severe colicky symptoms, but this effect was overcome by giving castor oil one hour after administration of the lead arsenate.

In consequence of the aforementioned experiences, attention was focused upon the lead arsenate treatment by announcements in professional and lay publications, including the *Sheep and Goat Raiser*,[6] and there was more or less extensive field use of the treatment which did not become a part of the published record. At about this time, limited trials of the treatment were carried out by the U. S. BAI in cooperation with the South Dakota Agricultural Experiment Station, the Extension Service of South Dakota State College, the South Dakota Livestock Sanitary Board, and the Western South Dakota Sheep Growers Association.[2, 5] The tests were incidental to an investigation of the cause of lamb scours. Necropsies of 3 scouring lambs revealed heavy tapeworm infection but no evidence of any other factor that could be associated etiologically with the scouring syndrome. In view of this finding, and of the aforementioned reports of the action of lead arsenate against tapeworms, 26 tapeworm-infected lambs, all of which were in poor condition and 19 of them scouring, were given treatments with this chemical. For these preliminary trials, in order to enhance the value of the information from standpoints of both efficacy and safety, doses of 1 Gm. per lamb were given in No. 13 gelatin capsules. The feces of the scouring lambs became dry and formed within one to four days after the elimination of the tapeworms. The efficacy of the treatment, based upon critical tests with 5 scouring lambs and fecal examinations of 3 others, was estimated to be about 92 per cent. The treatment appeared to have been 100 per cent effective in 6 cases, but only 80 and 16 per cent in the other 2. In these trials, 72 of 79 tapeworms were considered to have been removed by the medication. In the nonscouring lambs, the

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treatment appeared to be equally efficacious but the data were wholly preliminary. There was no evidence of injurious effects from the treatment.

Findings similar to those described above were reported almost simultaneously by Ward and Scales[1, 9, 10] of Mississippi State College,—the essential data[10] of their studies were published in June, 1946, while the principal report[9] to which reference is made above did not appear until September. Ward and Scales treated 11 scouring lambs with doses of 0.5 Gm., and 2 others with doses of 1 Gm. The animals were said to have a mild infection of stomach worms and nodular worms, and a mild to heavy infection of tapeworms and Strongyloides. One, or possibly both, of the latter species was considered chiefly responsible for the poor condition of the lambs, particularly because phenothiazine, which is effective against the others, did not relieve the characteristic syndrome of diarrhea, loss of weight, emaciation, and pot belly. Following treatment with lead arsenate, each of the lambs passed "from 10 to 150 chains of tapeworm segments." Four days after treatment, fecal examinations revealed no tapeworm eggs and the scouring condition ceased. The animals were returned to pasture where they remained in good condition.

PROBLEMS REQUIRING ATTENTION

From the above account, it is clear that the literature records the safe, effective, and beneficial administration of lead arsenate to nearly 4,000 ruminants, chiefly kids and lambs. This favorable record must be regarded as strong endorsement of the treatment, notwithstanding certain gaps in information to which no reference was made in the published reports. A major and unusual deficiency of experimental information concerns the extent to which the medication, by nature of its composition, may expose the tissues and organs of treated animals to toxic elements, namely, lead and arsenic, whose safe limits of concentration in human foods are quite low. There was evident need, therefore, of quantitative analyses of the extent to which lead and arsenic are deposited in the tissues of meat animals to which this treatment is administered, in order to appraise the possible risks of human injury. A few determinations, obligingly conducted for us by chemists of the Meat Inspection Division, Bureau of Animal Industry, gave encouraging findings. Both lead and arsenic were recovered from the organs of treated lambs, but the amounts were well within the limits of safety for human consumption. It is unlikely, therefore, that the treatment of meat animals involves risk to man, yet more data of this kind are desirable.

A question pertaining to the aforementioned consideration, as well as to the completeness of the experimental background of the treatment, is whether lead arsenate is the best chemical of its kind for teniacidal use. The compound is comparatively simple, having close chemical relatives, one or more of which might be found to have teniacidal action. Toxicologically, lead is more objectionable than most metals as a component of such medication and should be eliminated unless essential. Arsenic although less objectionable, is also undesirable if teniacidal action can be achieved without it. Conceivably, teniacidal trials with other arsenates, and with such compounds as the sulfide and oxide, as well as corollary tests of compounds such as lead antimonate and the sulfide and oxide, would throw light on this point. These are not more than suggestions to illustrate an approach to the problem, since there is little evidence that compounds of the type mentioned may be either safe to administer or teniacidal in action. A lack of experimental information along these lines, however, does not contraindicate in any way the use of the lead arsenate treatment.

Returning to the specific medicament under discussion, lead arsenate, the necessity of determining optimum doses for lambs, kids, calves, and mature stock is evident. The doses employed thus far, however remarkable the results, have been arbitrarily selected. Fortunately, the toxicity of lead arsenate has been well studied and the maximum tolerated dose of the chemical for mature sheep in good condition appears to be about 6 Gm., which suggests a reasonable margin of safety in the teniacidal dosage. The minimum effective dose is probably close to those doses that have been experimentally employed, namely, between 0.5 and 1 Gm. for lambs and kids, and up to 2 Gm. for calves and cattle. Critical trials with graduated doses in selected age groups of the different classes of ruminants would provide definitive data on satisfactory rates of dosage. It has been noted that the only critical tests to date are those with the 1-Gm. doses given to lambs by Habermann and Carlson (*loc. cit.*).

A further consideration is that a new treatment, unless experimental, carries with it the implication that it is superior to other treatments for the specific purpose for which it is intended. Acceptance of lead arsenate as the treatment of choice must, therefore, be determined in part by the results of comparative trials with optimum doses of this chemical and the doses ordinarily employed, presumably optimum, of other teniacides. In evaluating the comparative merits of such treatments, consideration should be given to all the criteria that establish the net value of a specific treatment. In a measure, the clinically beneficial effects of the lead arsenate treatment appear to give it an advantage over cu-nic, kamala, and other treatments from which comparable effects appear to have been rarely noted. Moreover, notwithstanding the paucity of comparative data, there is evidence that lead arsenate is of an unusually high order of efficacy. Substantial confirmation of this efficacy, added to what is already known about this and other tapeworm remedies, would materially reduce, and perhaps nullify, the significance of comparative data.

Finally, there are other avenues that should be investigated experimentally, such, for example, as the tolerance for the chemical by pregnant animals and the safety of repeated treatment, but the items already discussed serve amply to indicate the need for further study of the treatment in question. The data at hand, however, are sufficient to indicate that the treatment may be employed both safely and effectively, at least as far as concerns the effects upon the host and parasite.

SIGNIFICANCE OF TAPEWORMS TO THEIR RUMINANT HOSTS

The pathogenicity of ruminant tapeworms is a controversial issue. From the foregoing discussions, it is evident that the experimental studies of the treatment in question have thrown light on the importance of these parasites and, consequently, on the potential value of an effective teniacide to the conservation of livestock. Numerous veterinarians, parasitologists, packers, and stockmen have seen heavy tapeworm infections in apparently healthy sheep. On the other hand, almost all the experimental work with the lead arsenate treatment has involved the administration of the chemical to diarrheic, sometimes moribund, tapeworm-infected animals. The removal of tapeworms from them—presumably the only anthelmintic effect of the chemical—was followed by prompt, apparently complete, recovery of the sick animals. It seems likely, therefore, that the parasites in question may be more injurious than generally supposed, although they are obviously not pathogenic, in the usual sense, under all circumstances. The situation thus appears to be quite different from that of nematode parasitism, where certain parasites like Haemonchus, Trichostrongylus, and Bunostomum, if present in significant numbers, are almost always injurious. The observations of one of us (R.T.H.), which are apparently subscribed to by other investigators, suggest that some adverse condition of early life may be a causal antecedent of clinical tapeworm infection in lambs. The syndrome, which, in lambs, is characterized by rapidly progressing emaciation, weight loss, diarrhea, and often death, is found only in lambs up to about 6 months of age, and appears to affect those that have already suffered more or less severely from earlier nematode infections, particularly of Haemonchus and Trichostrongylus, or that are nursing ewes with poor udders, or ewes secreting an insufficient quantity of milk, or ewes that are on deficient diet. Until more is known about this condition, however, the specific circumstances under which tapeworms may be injurious must remain as conjecture. It should be borne in mind, moreover, that field observations on the pathogenicity of parasites do not ordinarily dissociate the effects of the several species that are usually present nor in every case the effects of parasitism from those of other factors.

SUMMARY

Experience with the lead arsenate treatment for removing common tapeworms from ruminants indicates that it can be used safely, effectively, and beneficially. Nevertheless, further information is needed on the quantitative occurrence of lead and arsenic in the tissues of treated animals, and on the value of related compounds which lack one or the other of these elements. Optimum doses of the chemical, the

efficacies thereof, and the relative value of lead arsenate and other teniacides, must be determined. Studies of the treatment under discussion have incidentally revealed that, under conditions not fully understood, tapeworms may be pathogenic to lambs, kids, and calves.

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Symptoms of X Disease

According to Olafson (*Cornell Vet.*, Oct., 1947), X disease, or hyperkeratosis, of cattle as observed in New York and neighboring states usually runs a chronic course of several weeks to three months or more. Watery discharge from the eyes and nose is the earliest sign, followed by poor appetite, loss of condition, depression and stupidity, loss of hair, and thickening of the skin (due to hyperkeratosis) over the upper two-thirds of the body, though not on the feet, legs, and face. Affected cattle appear half-starved yet refuse feed; they look like advanced cases of mange yet mange mites are not present. There may or may not be diarrhea. Papillary projections are observable on the mucosa of the mouth and esophagus; where these lesions are marked, emaciation and death are likely. Affected cows produce almost no milk, remain pregnant one to four weeks over term, and their offspring may be born dead or die shortly after birth. Chilling or overheating is common in all affected animals, due to a disturbance of heat regulation. Glistening, red, circular areas that stand out in relief may sometimes be observed on the gums or in the nostrils of calves.

There is no evidence that it is transmissible, and no successful treatment has been found.

Prostigmin in Canine Paraplegia

Prior treatment by two veterinarians over a period of several months did not benefit a paraplegic condition in a 3½-year-old Pomeranian injured by an automobile. X-ray examination disclosed no abnormality in the vertebral column or pelvis. Following two series of prostigmin treatment, impediments in movement vanished slowly but completely. Each series consisted of injections twice weekly for three weeks, the two series being separated by about six weeks. The dose at each injection was the content of an ampule (1.1 cc. of a 1:2,000 solution). The first injection was given May 1; recovery was complete by October.

A 5-month-old Boxer having paraplegia of the hind legs as a sequel to distemper also recovered following prostigmin therapy. The dosage schedule was an initial series of 15 injections followed by another series of six, the injections in both series being given every other day.

Intramuscular injection was necessary because nausea and vomiting resulted from oral administration. N. H. Bastawy, of the veterinary faculty of Fouad I University, Cairo, Egypt, attributed the effectiveness of the drug to "its ability to block the activity of cholinesterase and thus permit acetylcholine to perform its normal physiologic function of carrying nerve impulses across the synapses and myoneural junctions of the parasympathetic system."—*Vet. Rec., 60, (Feb. 28, 1948) :94-95.*

Chemotherapy of Cancer. — In the expanded battle against cancer, three drugs are mentioned as worthy of a trial, namely: colchicine, glutamic acid, and podophyllin. Colchicine has a known action on mytosis, glumatic acid has medicinal propertes yet to be defined clearly, and old May Apple (Podophyllum) is known (in veterinary medicine) as a rugged irritant to the duodenum, with alleged cholagogue dynamics.

Dosage and Blood Level of Streptomycin in Sheep

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THE ORGANISMS causing infectious diseases of domestic animals vary widely in susceptibility to the action of streptomycin. Consequently, a knowledge of both the sensitivity of animal pathogens and the blood level response of domestic animals to various doses of streptomycin is necessary for successful use of the antibiotic agent in clinical veterinary medicine. The study on sheep was undertaken as the first phase of an investigation to determine the blood level response of domestic animals to single intramuscular injections, and to establish dosage schedules that would be applicable to the clinical use of streptomycin.*

METHODS

The assay procedure was adapted from that described by Price, Nielsen, and Welch,[1] wherein *Bacillus circulans* was used as the test organism with serial dilutions of serum in a peptone and beef extract broth. In this work, broth containing 20 Gm. of tryptose and 5 Gm. of sodium chloride per liter was used. The medium was adjusted to pH 8.0 with a Beckman pH meter before sterilization. For the serum samples, serial twofold dilutions of 0.5 cc. were made in tryptose broth through sufficient tubes to insure an end point for the test. For the control series, streptomycin was diluted in serum to obtain a concentration of 4.0 units/cc. and from this standard twofold serial, dilutions of 0.5 cc. were made through seven tubes. The inoculum consisted of 1.5 cc. of a 10^{-4} dilution of a 24-hour broth culture of *B. circulans* in tryptose broth for each tube in the control and unknown series. The determinations were read after twenty-four hours of incubation at 35 C. The lowest quantity of streptomycin detected by the assay was 0.25 μg./cc. of serum.

Blood samples for the assay were obtained from the jugular veins with sterile syringes at one-hour or two-hour intervals. The blood samples were allowed to clot at room temperature, centrifuged, and serum dilutions made within one to two hours.

The serum concentration, following single intramuscular injections, was studied by taking samples over periods of six to fourteen hours. Maintenance of sustained serum concentrations at various levels was studied by making serial injections of streptomycin at three-hour intervals until five injections had been made with hourly bleedings for fifteen hours. All injections were made in the gluteal muscles of normal sheep using streptomycin hydrochloride, 50,000 units/cc. in saline.

TABLE 1—Streptomycin Hydrochloride, 0.5 mg. (500 Units) per Pound of Body Weight—Intramuscularly

Weight	Dose		Units per cc. of serum at specified hours following injection									
(lb.)	mg.	units	1	2	3	4	5	6	7	8	9	10
140	70.0	70,000	2.0	1.0	1.0	1.0	0.5	0.25	0.25	0.25	0.0	...
145	72.5	72,500	2.0	1.0	1.0	0.5	0.5	0.25	0.25	0.0	0.0	...
140	70.0	70,000	2.0	2.0	2.0	1.0	0.5	0.5	0.5	0.5	0.0	...
105	51.0	51,000	2.0	2.0	1.0	0.5	0.5	0.25	0.25	0.25	0.0	...
175	87.0	87,000	2.0	2.0	1.0	1.0	0.5	0.5	0.5	0.5	0.25	...
105	51.0	51,000	2.0	1.0	1.0	0.5	0.5	0.25	0.25	0.25	0.0	...
145	72.5	72,500	2.0	1.0	0.5	0.25	0.25	0.25	0.25	0.0	0.0	...
140	70.0	70,000	2.0	2.0	1.0	0.5	0.5	0.5	0.25	0.25	0.0	...
140	70.0	70,000	2.0	1.0	1.0	0.5	0.5	0.5	0.25	0.25	0.25	...
Average blood level.....			2.0	1.5	1.0	0.64	0.47	0.36	0.3	0.25	0.05	...

From the Department of Animal Pathology, Kentucky Agricultural Experiment Station, Lexington.

The investigation reported in this paper is in connection with a project of the Kentucky Agricultural Experiment Station and is published by permission of the director.

*The streptomycin used in this investigation was supplied through the courtesy of Merck and Company, Inc., Rahway, N. J.

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TABLE 2—Streptomycin Hydrochloride, 1.0 mg. (1,000 Units) per Pound of Body Weight—Intramuscularly

Weight	Dose		Units per cc. of serum at specified hours following injection									
(lb.)	mg.	units	1	2	3	4	5	6	7	8	9	10
145	145	145,000	8.0	4.0	2.0	2.0	1.0	1.0	0.5	0.5	0.5	...
140	140	140,000	4.0	4.0	2.0	2.0	1.0	1.0	1.0	0.5	0.5	...
105	105	105,000	4.0	2.0	1.0	1.0	0.5	0.5	0.5	0.0	0.0	...
130	130	130,000	4.0	4.0	4.0	2.0	1.0	1.0	0.5	0.5	0.5	...
125	125	125,000	4.0	4.0	2.0	2.0	1.0	1.0	0.5	0.5	0.25	...
145	145	145,000	4.0	4.0	2.0	2.0	2.0	1.0	0.5	0.5	0.5	...
130	130	130,000	4.0	4.0	4.0	2.0	1.0	1.0	1.0	1.0	1.0	...
130	130	130,000	4.0	4.0	2.0	1.0	1.0	1.0	0.5	0.5	0.5	...
Average blood level.....			4.5	3.5	2.4	1.7	1.2	0.9	0.6	0.6	0.47	...

RESULTS FROM SINGLE INTRAMUSCULAR INJECTIONS

The concentration of streptomycin in the serum was determined at hourly intervals for periods of six to nine hours, following single intramuscular injections of 0.5, 1.0, and 2.0 mg./lb. of body weight. With a dose of 4.0 mg./lb. of body weight, determinations were made at two-hour intervals over a period of fourteen hours.

Following doses of 0.5 mg. (500 units)/lb. of body weight, the serum concentration at one hour following injection was 2.0 units/cc. of serum in each of nine trials. This concentration had fallen to 1.0 unit/cc. in 5 animals at the two-hour period. From the third through the ninth hours of determination, the serum concentration fell gradually with individual variations. Zero points were obtained in 2 animals on the eighth hour following injection, and in 5 others on the ninth hour. Results of the individual trials are shown in table 1.

In 8 sheep, a dose of 1.0 mg. (1,000 units)/lb. of body weight resulted in serum concentrations averaging 4.5 and 3.5 units/cc. at the first and second hours following injection. These quantities were approximately double those obtained at the first and second hours with the 0.5-mg. dose. From the third to ninth hours, the serum level for the 1.0-mg. dose was approximately the same as that obtained during the first seven hours with the 0.5-mg. dose. A zero level, occurring at the eighth hour, was obtained for only 1 animal. Complete data for the individual trials are given in table 2.

The results of ten individual determina-

TABLE 3—Streptomycin Hydrochloride, 2.0 mg. (2,000 Units) per Pound of Body Weight—Intramuscularly

Weight	Dose		Units per cc. of serum at specified hours following injection										
(lb.)	mg.	units	0.5	1	2	3	4	5	6	7	8	9	10
175	350	350,000	16.0	16.0	16.0	8.0	4.0	4.0	4.0	..	..	..	..
140	280	280,000	16.0	16.0	16.0	8.0	4.0	4.0	2.0	..	..	..	..
145	290	290,000	16.0	16.0	8.0	8.0	4.0	4.0	2.0	..	..	..	..
140	280	280,000	16.0	16.0	16.0	8.0	4.0	4.0	2.0	..	..	..	..
105	210	210,000	16.0	16.0	8.0	4.0	4.0	2.0	2.0	..	..	..	..
130	260	260,000	...	16.0	16.0	8.0	4.0	4.0	2.0	2.0	2.0	2.0	..
125	250	250,000	...	16.0	8.0	8.0	8.0	4.0	1.0	1.0	1.0	0.5	..
145	290	290,000	...	16.0	8.0	8.0	8.0	4.0	4.0	2.0	2.0	2.0	..
130	260	260,000	...	16.0	8.0	8.0	4.0	4.0	2.0	2.0	1.0	1.0	..
130	260	260,000	...	16.0	8.0	8.0	4.0	4.0	2.0	2.0	2.0	1.0	..
Average blood level.....			16.0	16.0	9.6	7.6	5.0	3.8	2.3	1.8	1.6	1.3	..

TABLE 4—Streptomycin Hydrochloride, 4.0 mg. (4,000 Units) per Pound of Body Weight—Intramuscularly

Weight	Dose		Units per cc. of serum at specified hours following injection								
(lb.)	mg.	units	1	2	4	6	8	10	12	14	15
175	700	700,000	64.0	64.0	32.0	16.0	8.0	8.0	4.0	2.0	..
140	560	560,000	64.0	32.0	16.0	16.0	8.0	4.0	2.0	2.0	..
145	580	580,000	64.0	32.0	32.0	16.0	8.0	4.0	2.0	2.0	..
140	560	560,000	32.0	64.0	32.0	16.0	8.0	4.0	4.0	2.0	..
105	420	420,000	64.0	32.0	16.0	8.0	2.0	2.0	1.0	1.0	..
130	520	520,000	64.0	64.0	32.0	16.0	8.0	4.0	4.0	2.0	..
Average blood level.....			58.6	48.0	30.0	14.6	7.0	4.3	2.8	1.8	..

tions with a dose of 2.0 mg. (2,000 units)/lb. of body weight are shown in table 3. At the first, second, and third hours following injection, the serum level averaged 16.0, 9.6, and 7.6 units/cc. At the fourth hour, the serum level was approximately the same as that obtained at the first hour with the 1.0-mg. dose. With the 2.0-mg. dose, the fall in serum concentration from the fourth to ninth hours followed nearly the same pattern as that obtained during the first five hours with the 1.0-mg. dose. The serum level at the seventh, eighth, and ninth hours was approximately the same as that of the first three hours with the 0.5-mg. dose. Zero levels were not obtained during the nine hour period with the 2.0-mg. dose.

Six sheep receiving a dose of 4.0 mg. (4,000 units)/lb. of body weight had serum concentrations of streptomycin averaging 58.6, 48.0, 30.0, 14.6, and 7.0 units/cc. for the first, second, fourth, sixth, and eighth hours, respectively, following injection. The serum level at the sixth hour was approximately the same for this dose as that obtained at the first hour with the 2.0-mg. dose. At ten hours, the serum level approximated that of the first hour for the 1.0-mg. dose, and the level at the fourteenth hour was near the first hour average of the 0.5-mg. dose. Zero levels were not obtained during the fourteen-hour test period. Results of the individual trials are shown in table 4.

TABLE 5—Streptomycin Hydrochloride, 0.25 mg. (250 Units) per Pound of Body Weight. Intramuscular Injections at Three-Hour Intervals

Weight	Dose		Units per cc. of serum at specified hours following injection															
(lb.)	mg.	units	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
125	31.25	31,250	..	1.0	1.0	0.5	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	..
145	36.25	36,250	..	1.0	0.5	0.5	2.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	..
130	32.50	32,500	..	2.0	1.0	0.5	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	..
130	32.50	32,500	..	1.0	1.0	0.5	2.0	1.0	0.5	2.0	1.0	1.0	2.0	1.0	0.5	2.0	1.0	1.0	..
Injection intervals			X			X			X			X			X				

RESULTS FROM SERIAL INTRAMUSCULAR INJECTIONS

The gradual absorption and excretion of streptomycin following single intramuscular injections and the gradually receding blood concentration extending over periods of several hours indicate that it should be possible to maintain a level of the anti-

TABLE 6—Streptomycin Hydrochloride, 0.5 mg. (500 Units) per Pound of Body Weight. Intramuscular Injections at Three-Hour Intervals

Weight	Dose		Units per cc. of serum at specified hours following injection*															
(lb.)	mg.	units	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
175	87.5	87,500	..	2.0	1.5	1.0	8.0	4.0	4.0	8.0	4.0	4.0	8.0	8.0	4.0	8.0	4.0	4.0	..
140	72	72,000	..	2.0	1.5	1.0	4.0	4.0	2.0	8.0	4.0	4.0	8.0	4.0	4.0	8.0	8.0	4.0	..
145	72.5	72,500	..	2.0	1.5	1.0	8.0	4.0	2.0	8.0	4.0	2.0	4.0	4.0	2.0	8.0	4.0	2.0	..
130	65	65,000	..	2.0	1.5	1.0	8.0	4.0	4.0	8.0	4.0	4.0	8.0	4.0	4.0	8.0	4.0	4.0	..
Injection intervals.....			X			X			X			X			X				

*Serum concentrations at hours 1, 2, and 3 are averages selected from table 1.

biotic agent in the serum within well-defined limits, by properly spacing serial injections. An injection interval of three hours was selected to determine if the residual streptomycin from previous injections plus each succeeding injection would maintain a serum concentration at fairly uniform levels over a period of several hours. Beginning at the first hour after the initial injection, blood samples were taken at hourly intervals for a period of fifteen hours during which four intramuscular injections of streptomycin were made. The blood sample for the end of each three-hour period was taken immediately before the reinjection of streptomycin. Four animals were used for each dosage level tested.

With serial injections at three-hour intervals, using a dose of 0.25 mg. (250 units)/lb. of body weight, the results indicate that serum levels between 1.0 and 2.0 units/cc. may be expected after the second injection of the series. In two instances with 1 animal, the serum concentration dropped to 0.5 unit/cc. at the end of succeeding three-hour periods. The results for each animal are shown in table 5.

Serum concentrations resulting from doses of 0.5 mg. (500 units)/lb. of body weight are shown in table 6. With this dose, it appears that a serum level of streptomycin varying from 4.0 to 8.0 units/cc. can be expected in most instances when injections are made at three-hour intervals. In 1 sheep, the serum level was 2.0 units/cc. at the end of the second three-hour period, and in another the serum level dropped to 2.0 units/cc. at the end of each succeeding three-hour period.

Following the second injection of doses of 1.0 mg. (1,000 units)/lb. of body weight, it appears that a serum concentration between 8.0 and 16.0 units/cc. will be maintained. In no instance did streptomycin in the serum fall below 8.0 units/cc. The results of each trial are given in table 7.

Increasing the dosage level to 2.0 mg. (2,000 units)/lb. of body weight, with an interval of three hours between injections, resulted in serum concentrations that were maintained between 16.0 and 32.0 units/cc. In no instance did the streptomycin in the serum fall below 16.0 units/cc. In 1 animal, the concentration rose to 64.0 units/cc. at the first hour following the fifth injection. The results of each trial are given in table 8.

TABLE 7—Streptomycin Hydrochloride, 1.0 mg. (1,000 Units) per Pound of Body Weight. Intramuscular Injections at Three-Hour Intervals

Weight	Dose		Units per cc. of serum at specified hours following injection*															
(lb.)	mg.	units	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
130	130	130,000	..	4.0	4.0	2.0	16.0	8.0	8.0	16.0	16.0	8.0	16.0	16.0	16.0	16.0	16.0	8.0
125	125	125,000	..	4.0	4.0	2.0	16.0	8.0	8.0	16.0	8.0	8.0	16.0	16.0	8.0	16.0	16.0	8.0
145	145	145,000	..	4.0	4.0	2.0	8.0	8.0	8.0	16.0	16.0	8.0	16.0	16.0	8.0	16.0	16.0	16.0
130	130	130,000	..	4.0	4.0	2.0	16.0	16.0	8.0	16.0	16.0	16.0	16.0	16.0	8.0	16.0	16.0	16.0
Injection intervals.....			X			X			X			X			X			

*Serum concentrations at hours 1, 2, and 3 are averages selected from table 2.

DISCUSSION AND CONCLUSIONS

As compared with penicillin, the relatively slow elimination of streptomycin from the body makes it much easier to maintain blood concentrations at a fairly uniform level without resorting to agents for delaying absorption or excretion. From data obtained in this study, it appears that a blood level of a desired concentration can be maintained within close limits by intramuscular injection of streptomycin at three-hour intervals. Dosage at the rate of

TABLE 8—Streptomycin Hydrochloride, 2.0 mg. (2,000 Units) per Pound of Body Weight. Intramuscular Injections at Three-Hour Intervals

Weight	Dose		Units per cc. of serum at specified hours following injection*															
(lb.)	mg.	units	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
130	260	260,000	..	16.0	8.0	8.0	32.0	16.0	16.0	32.0	16.0	16.0	32.0	32.0	16.0	64.0	32.0	32.0
125	250	250,000	..	16.0	8.0	8.0	32.0	32.0	16.0	32.0	32.0	16.0	32.0	16.0	16.0	32.0	32.0	16.0
145	290	290,000	..	16.0	8.0	8.0	32.0	16.0	16.0	32.0	16.0	16.0	32.0	32.0	16.0	32.0	32.0	16.0
130	260	260,000	..	16.0	8.0	8.0	32.0	16.0	16.0	32.0	16.0	16.0	32.0	32.0	16.0	32.0	32.0	16.0
Injection intervals.....X						X			X			X			X			

*Serum concentrations at hours 1, 2, and 3 are averages selected from table 3.

0.25 mg./lb. of body weight maintains a serum concentration between 1.0 and 2.0 units/cc.; doses of 0.5 mg./lb., between 4.0 and 8.0 units/cc.; doses of 1.0 mg./lb., between 8.0 and 16.0 units/cc; and doses of 2.0 mg./lb., between 16.0 and 32.0 units/cc. The 0.5-mg./lb. dose essentially quadrupled the serum concentration over that obtainable by serial injections at three-hour intervals of 0.25-mg./lb. doses. The 1.0-mg./lb. dose doubled serum concentrations over that obtainable from the 0.5-mg./lb. dose, and the dose of 2.0-mg./lb. doubled the serum concentration over that obtained from the 1.0-mg./lb. dose.

The regularity with which the serum concentration can be adjusted and maintained makes it readily feasible for the clinician to adjust a dosage schedule that will constantly maintain a level of streptomycin in the blood necessary to combat an infection against which treatment is being directed.

The Blood Cells of Normal Dogs

A study was made of 74 young, adolescent, and adult dogs (both sexes) of weights ranging from 11 to 33 lb. (average 23 lb.), and of good general health as checked by critical examinations. The dogs chosen had been fed the usual ration of outdoor life (table scraps, kitchen refuse, bones) and, during the experiment, were maintained on that normal plane. The study was made by M. R. El Hindawy at the School of Veterinary Medicine, Fuad I University, Cairo, Egypt. The methods employed and the results obtained were published in *The Veterinary Journal*, London, February, 1948, in full detail. A crude abstract of the published observation shows:

Erythrocytes per cmm.

Animal	Minimum	Maximum	Average
Pups	3,150,000	5,920,000	4,300,000
Adolescents	3,550,000	6,770,000	4,583,000
Adult bitches	3,550,000	7,360,000	5,696,666
Adult males	3,280,000	8,700,000	5,477,000
Adults regardless of sex			5,587,000

The counts mounted from 3 months of age to puberty and those of females were slightly higher than males. Variations of a million in individual dogs within a few days were common.

The norm for both sexes varied widely as did also the count of individual dogs,

Leucocytes per cmm.

Animal	Minimum	Maximum	Average
Pups	5,600	10,600	8,123
Adolescents	5,400	19,800	11,065
Adults	7,000	22,400	12,760

agreeing in that respect with investigators generally. There were no significant differences between sexes. The low count in the pups was attributed in part to the diet chosen. That vigorous, robust dogs have a higher white cell count than poorly nourished ones, disease excluded, is generally conceded; in bitches, a decrease in the white cell count during the suckling and weaning periods is likewise recognized. A fair average for pups ranged between 7,000 and 7,762 per cmm. and for adults irrespective of sex 8,700, based upon a count of 8,490 for males and 9,090 for females.

Hemoglobin per cent

Animal	Minimum	Maximum	Average
Pups	45	55	50.5
Adolescents	41	56	48.4
Adult males	46	75	56.1
Adult females	49	73	58.4

If 100 per cent is to be taken as the average hemoglobin of the adult human being, the average for normal adult dogs would be 57 per cent. The high hemoglobin content at birth begins to decrease after the first 3 months of age, due to the destruction of erythrocytes by hemolysis and to the decrease in bone-marrow activity.

Hemoglobin Gm. per 100 cmm.

Animal	Minimum	Maximum	Average
Pups	7.8	9.4	8.7
Adolescents	7.2	9.5	8.5
Adult males	8.0	12.6	9.0
Adult females	8.3	12.5	10.1

Radeff (1934) gave the gram per kilogram of body weight of dogs as follows: fetus, 8.74 to 13.38; 20 to 30 days old, 3.12 to 5.47; and adults, 9.33. After puppyhood, there was a rapid drop in hemoglobin and after puberty the number of red cells determined its concentration.

In respect to the leucocyte counts of dogs, the literature will show discrepancies ranging from 6,000 to 31,000 per cmm., obviously due to conclusions drawn from limited studies. The value of El Hindawy's impressive work lies in the large number of dogs of various sorts studied, as well as the pains shown in the investigation.

Histoplasmosis in Dogs

A Report of Two Cases

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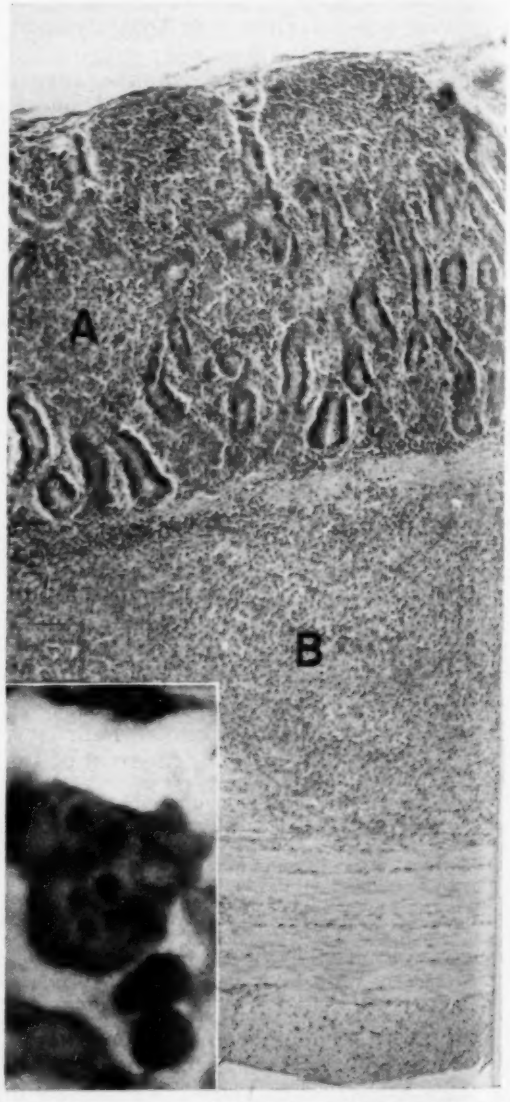
HISTOPLASMOSIS is regarded as a rare disease. However, the literature contains reports from various parts of the United States of ten instances of this infection in dogs.[1-5] The organism has been recently isolated from 1 mouse and 10 rats which were trapped in a vicinity in which the disease had also been found in dogs.[6] Since this disease is not easily recognized clinically, it is possible that many cases are overlooked. The 2 cases to be reported will bring the total to 12, and will add data which may be helpful in diagnosis of histoplasmosis in dogs.

CASE 1 (AIP Accession 186, 533)

A male mongrel, smooth-haired Fox Terrier, was born on Sept. 28, 1945. He was first seen by a veterinarian in April, 1946, when he was treated for roundworms. Generalized rickets was present. Later in April the animal was struck by a car; he showed symptoms of paraplegia for about two weeks afterward, but then gradually became able to walk normally. The dog was again brought to the veterinarian in November, 1946, because of gradual loss of appetite during the preceding weeks. Examination revealed severe emaciation, paleness of mucous membranes, and bowing of the front legs with enlargement at the joints. No sequelae of the car accident were observable at this time. A small firm mass was palpated in the abdomen near the root of the mesentery. The dog was sacrificed, by means of saturated solution of magnesium sulfate given intravenously.

Autopsy Findings.—The only gross lesions noted were two greatly enlarged lymph nodes in the mesentery near the ileocecal junction. These were roughly the same size and shape, being 4.5 cm. long and 1.4 cm. in diameter, and were tightly adherent to each other along their apposing borders. The cut surface of each was smooth and yellow-white. Specimens of intestine and the attached mesentery containing the enlarged nodes were submitted to the Army Institute of Pathology for microscopic examination.

Microscopic Findings.—The sections re-



—*AIP Negatives 102799 and 101346*

Fig. 1—Case 1. Section of ileum (x 85). Note epithelioid granulation tissue in mucosa (A) and submucosa (B). Insert—Higher magnification of (B) showing Histoplasma Capsulatum in swollen epithelioid cell.

Selected cases from the Registry of Veterinary Pathology, Army Institute of Pathology, Washington 25, D. C.

vealed the mesenteric lymph nodes to be intensely infiltrated with epithelioid cells which displaced most of the nodal architecture. There was no necrosis, caseation, or calcification in these nodes. Under the oil immersion lens, the epithelioid cells were seen to contain many cytoplasmic organisms. These organisms were usually spheroid in shape and were surrounded by a double contoured capsule which remained unstained in the hematoxylin and eosin sections. They were somewhat irregular in size and shape but generally measured 2.4 to 3.6 μ in diameter. Inside this capsule was a small round or ovoid basophilic mass. Organisms were present in large numbers in some cells but in others only one or two were seen, and none were present outside of epithelioid cells.

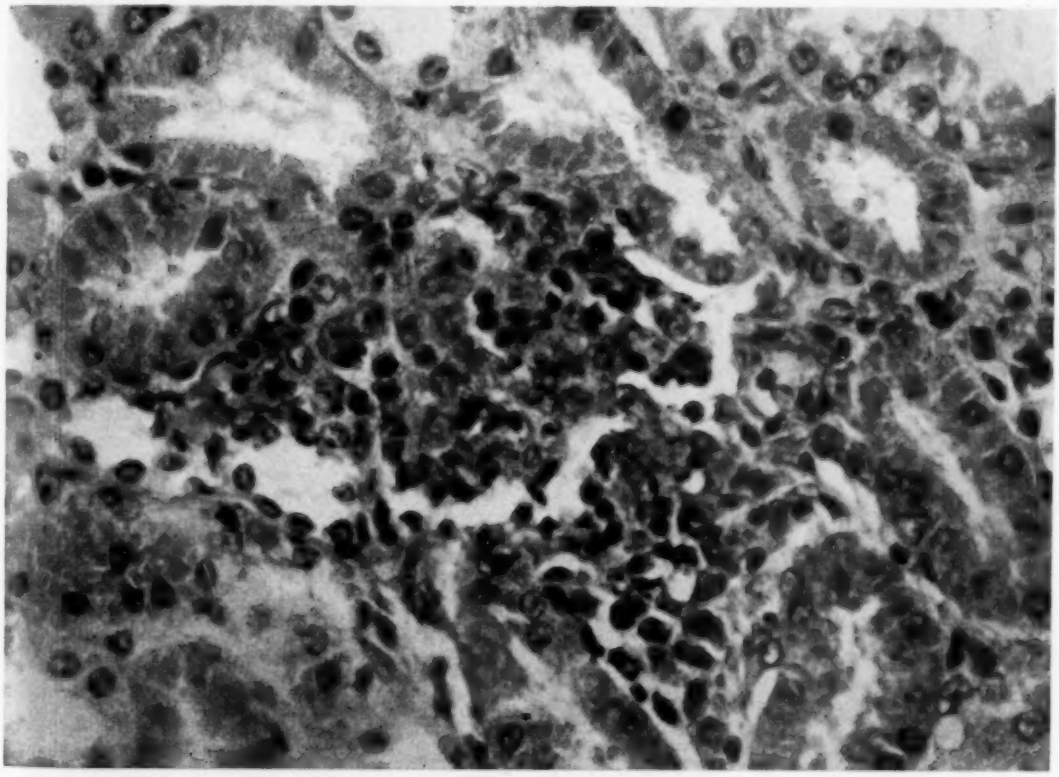
In the ileum, in the areas adjacent to the lymph node described, the tips of the villi were eroded and replaced by epithelioid cells similar to those seen in the lymph node (fig. 1). These cells were also seen in large numbers in the submucosa. Many of the cells contained intracellular parasites.

In the colon, numerous granulomatous foci similar to those in the ileum and lymph node were seen in the submucosa. There was also some erosion of the epithelium and infiltration of the mucosal stroma. Typical organisms could also be seen in the epithelioid cells. When stained by the Bauer method for glycogen, the capsules of these organisms took the red stain and they appeared as red rings within the epithelioid cells.

The diagnosis was based upon the typical reticulo-endothelial hyperplasia and microscopic appearance of the organism, both of which are regarded as characteristic of infection with *Histoplasma capsulatum*.

CASE 2 (AIP Accession 196,882)

This dog was a brindle, male mongrel Fox Terrier with medium long hair. The dog was brought to the veterinarian in October, 1947, because he had been losing weight for about two weeks and had shown anorexia,

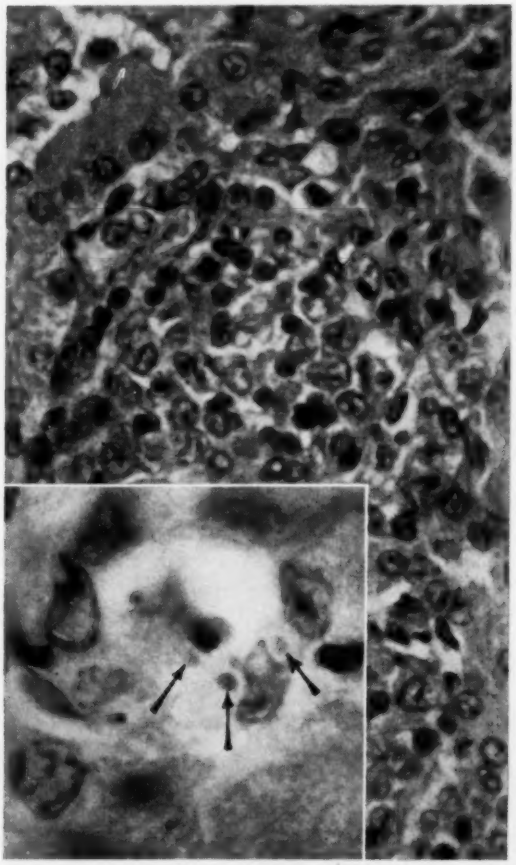


—AIP Negative 196882-8

Fig. 2—Case 2. Kidney of dog (x 500). Small granuloma in renal cortex surrounded by convoluted tubules. Histoplasma Capsulatum was demonstrated in epithelioid cells in center of field.

increased thirst, and persistent vomiting. The night before, partial paralysis of both hind legs had become apparent. The dog had been treated for worms with proprietary remedies on several occasions. Examination revealed a dog with foul breath and enlarged abdomen in which the liver could be palpated below the ribs. Euthanasia was advised and carried out with intravenous injection of a solution of magnesium sulfate.

Further inquiry disclosed that this dog was a litter mate of the dog in case 1. They had been separated at time of weaning and had not been in intimate contact since that time, except for such association as might occur in a small town, since they were owned by different individuals. This puppy had been considered normal at the time of weaning.



—AIP Negatives 196882-1 and 2

Fig. 3—Case 2. Liver of dog (x 500). Epithelioid cells compress and replace much of liver parenchyma. Insert —Higher magnification (x 1,360) of Histoplasma Capsulatum (arrows) in phagocytic cells.

Autopsy Findings.—At autopsy, the liver was found to be enlarged, firm, and paler than normal. The kidneys were small, firm, pale, and the capsules adhered closely. The other organs appeared normal. A moist, grayish white mass was found in the mediastinum. The spleen was also enlarged and somewhat pale. Tissues were submitted to the Army Institute of Pathology for microscopic examination.

Microscopic Findings.—The mediastinal mass was found to be an enlarged lymph node, most of which was replaced by epithelioid granulation tissue. Many of these epithelioid cells contained one or more small, round or ovoid bodies surrounded by a distinctive unstained capsule. In the adjacent lung, the epithelioid tissue extended into the subpleural stroma. There was moderate anthracosis throughout the lung and a few small areas of atelectasis. In the kidney (fig. 2), the cortex contained a few small foci of epithelioid cells and a few aggregations of lymphocytes and plasma cells. Many of the cells of the small granulomas contained parasites similar to those seen in the lung. A few scattered glomeruli showed varying degress of fibrosis. The liver was severely infiltrated with epithelioid cells which displaced much of the normal parenchyma (fig. 3). Most of these cells were concentrated in the periportal regions, but some were also seen in other parts of the lobule. Many of these epithelioid cells contained typical histoplasma. In the spleen there was also intense infiltration of histoplasma-containing epithelioid cells.

The diagnosis in this case was based on the microscopic demonstration of typical lesions and intracellular organisms of characteristic structure.

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A Reticulum Cell Sarcoma in a Dog

This tumor was found at autopsy in a 2½-month-old, female hound puppy. She was a litter mate of 6 others that were apparently normal. Each of the dogs was treated with 2 cc. of N-butyl chloride following a positive hookworm diagnosis.

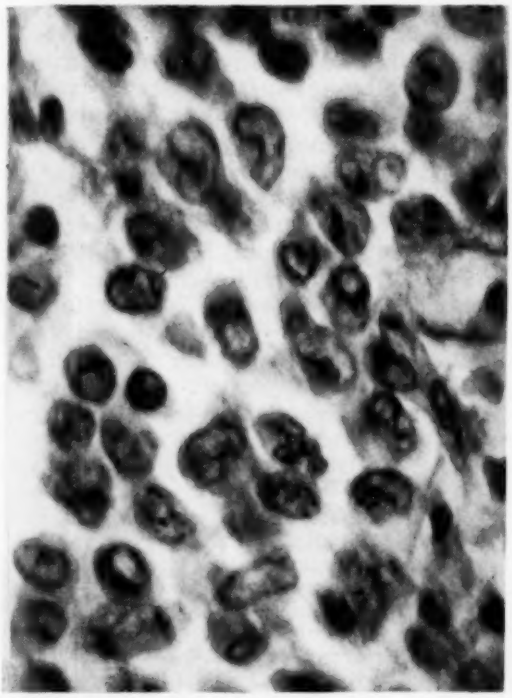

Fig. 1—Showing several of the reticulum cells with bean-shaped nuclei. x 970.

The pup that was finally autopsied developed a severe ascites two weeks after treatment. Aspiration temporarily relieved the ascites. Pneumonia developed and approximately 300,000 units of penicillin was given. The pup died four days after the aspiration of the ascitic fluid.

On gross examination, the liver was found to be greatly enlarged and greyish white. The peritoneal cavity contained about a liter of ascitic fluid. Numerous small red nodules were scattered throughout the mesentery. The spleen was slightly enlarged and congested. The kidneys, pancreas, stomach, and intestines were normal in appearance.

The elements of a reticulum cell sarcoma, as shown in figure 1, were found in sections of the liver and in the mesentery attached to the spleen. The cells of this tumor were 15 to 20 μ in diameter and had a large round or bean-shaped vesicular nucleus surrounded by an abundant, granular, acidophilic cytoplasm. Mitosis was not common. In the liver, these cells had invaded the sinusoids and portal areas, and had replaced much of the parenchyma (fig. 2). In

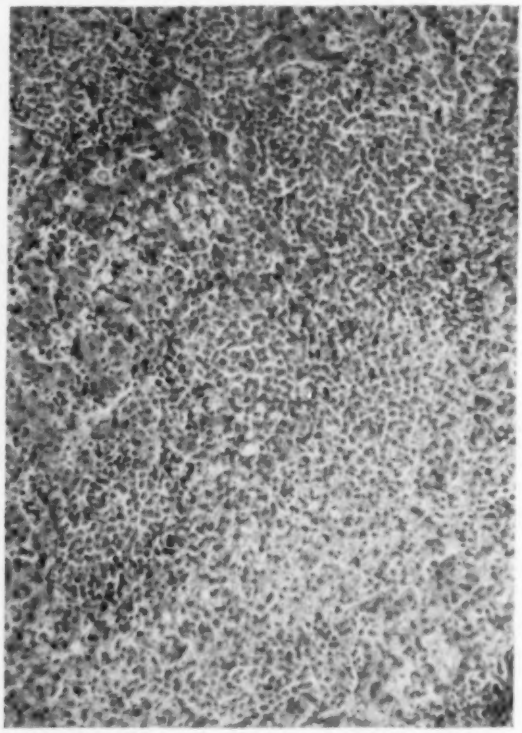

Fig. 2—Note replacement of liver parenchyma by the the reticulum cells. x 100.

the mesentery, they were found in rather compact masses. The tumor cells could not be identified in sections of the lung, spleen, and kidneys. Sections of the liver stained by the Bielschowsky-Maresch method showed reticulum fibers in the areas of tumor cells.—*John E. Johnson, D.V.M., Dyersburg, Tenn., and John H. Milliff, M.S., D.V.M., College Station, Texas.*

Quinoline Diphosphate and Paludrine

In testing the germicide properties of quinoline diphosphate on cattle affected with anaplasmosis, in the study of the drug for human malaria, the Oklahoma Veterinary Research Institute discovered that 85 per cent of the cases treated were cured of all clinical evidence of the disease but continued to remain carriers of the parasite. The same results were obtained from paludrine.

Swine Brucellosis

On a pig farm in upper Egypt during February, 1948, sows farrowed fully formed pigs at term, but many of the pigs were born blind and most of them died within seven days. The mothers were apparently in good condition.

Postmortem examinations showed uniformly acute hemorrhagic enteritis without ulceration. One out of every 5 of the dead pigs revealed small, pinhead hemorrhages under the capsule of the kidney. The lungs showed occasional hemorrhagic patches; other organs including the spleen appeared normal.

Blood Films.—Blood films did not reveal much information. Few organisms were present; occasionally *Babesia suis* was seen.

Blood Cultures.—When 2 to 3 cc. of blood was seeded on agar, a fair growth of small, gram-negative, noncapsulated, nonsporulating, nonmotile rods appeared. On primary growth, fairly large colonies about 1 to 2 mm. in diameter were isolated after forty-eight hours incubation. They appeared raised, dry, and opaque. In broth there was general turbidity. No sugars were fermented.

A filtrate from the blood of the dead pigs was prepared, using a Seitz filter (6 in. in diameter) at 70 mm. pressure, at 15 C. for fifteen minutes. The blood was diluted in saline citrate 1:20 before filtration.

TABLE I—Temperature of Healthy Pig Inoculated Intramuscularly with 2 cc. of Filtrate Made from Blood of Dead Pigs (February, 1948)

Date	Temperature	Date	Temperature
11	39.0 C.*	16	38.5
12	39.1	17	38.9
13	39.4	18	39.2
14	39.0	19	39.1
15	38.5	20	39.1
		21	39.2

*Temperature before inoculation. All others are following inoculation.

A 3-month-old, healthy pig purchased from a farm at Gizo was inoculated intramuscularly with 2 cc. of the filtrate. Table 1 shows the temperatures recorded over a ten-day period. During this time, the pig was eating well and appeared normal. There were no symptoms of swine fever (hog cholera). It is believed that these tests proved conclusively the outbreak was not one of swine fever.

Two white mice were inoculated intramuscularly with ½ cc. of whole blood 1:20 dilution. Two Egyptian-bred, adult rabbits received 1 cc. of the whole blood of the dead pigs, and 1 cc. each was given to 2 guinea pigs. The white mice were kept for ten days and then destroyed. There was no apparent effect during this time. One of the rabbits died five days after inoculation; the other died seven days after inoculation. *Brucella suis* was isolated from the blood of both. One guinea pig died six days following inoculation, and *Br. suis* was isolated from its blood. The second guinea pig appeared normal and was destroyed ten days after inoculation.

Five sows, whose pigs had died during the outbreak, were tested using the old strain previously isolated. All reacted at 1:25 only. Using the freshly isolated strain, titers up to 1:80 dilution were found. Of the 17 fully grown boars, only 3 were found positive with a low titer of 1:25.

PREVIOUS OUTBREAK

A previous outbreak in 1943 resulted in

1) Pigs aborted early.

2) Sterile pigs, on postmortem examination, revealed cystic ovaries.

3) Boars showed fibrous testicles with cystic foci.

4) The organisms isolated produced cystic ovaries in guinea pigs six months following inoculation with living cultures.

5) Guinea pigs inoculated with dead cultures were protected from developing cystic ovaries.

6) Buffaloes and cows on the same farm did not abort.

7) No streptomycin was available for trial on pigs.

SUMMARY

This recent outbreak resulted in

1) The death of fully carried, well-developed pigs within one week of birth.

2) The organisms proved septicemic to rabbits and guinea pigs and not septicemic to white mice.

3) Three-day-old broth cultures of the recently isolated strain were heated in a water bath at 58 C. for fifteen minutes. When formalin (1:2,000) was added, the culture was nonviable after three days and was used as a vaccine for other pigs, since starting with fresh stock is impossible on a farm which raises 2,000 animals. Moreover, healthy, susceptible animals might become infected from neighboring farms, which are probably contaminated.—*Zaki Morcos, F. R. C. V. S., M.V.Sc., D.V.H., Cairo Veterinary College, Egypt.*

This is a supplement to the article on this subject which was reported in the *Journal of Royal Egyptian Medical Association, 26,* (Oct., 1943). The data presented here were collected on the same farm as those in the preceding report.

Anaplasmosis and its Treatment with Neoarsphenamine

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THE TREATMENT of anaplasmosis in cattle presents a serious problem. There is no specific remedy for it, and the immunity conferred upon the animals which have recovered is questionable. Numerous cases recur in from twenty days to six months, the animal suffering the second attack in the same locality in which the first occurred.

In such cases of recurrence, it is not possible to believe in chronic anaplasmosis on account of the fact that each successive attack was milder, with no evidence of the presence of germs in the intervals between attacks.

On the other hand, however, we found in the truly chronic cases that there was practically no change during the course of the malady, the animal showing every evidence of being below normal, with the continuous presence of the germ.

Reports have also been received of 3 cases of triple recurrence within six months, but the writer was neither able to examine the animals nor to make a blood test at any time. However, knowing the insidious characteristics of anaplasmosis, and having received the reports from a reliable source, credence may be given to the information.

FACTORS INFLUENCING INCIDENCE

Breed, sex, age, nutrition, and the prevalence of ticks are factors which affect the animal's susceptibility to anaplasmosis. Females are more susceptible than males. The breeds which are most apt to contract the disease are given in the following order of susceptibility: (1) Holstein-Friesian, (2) Brown Swiss, (3) Jersey, and (4) Shorthorn. After the animal is 1½ years old, age has no differential importance. Acute fatal cases have been found among cows 1½ years old, as well as among those of 4 years of age. Well-nourished animals are better able to resist the disease than are those poorly nourished. The prevalence of ticks in the locality where the animal is kept is also a decisive factor. Where ticks abound, higher losses have occurred, whereas no loss has been sustained where ticks are absent; although there are usually infected animals in the vicinity and various blood-sucking flies and mosquitoes, which could transmit the infection.

TREATMENT

The following histories refer to three lots of young cows imported by three ranch

TABLE I—Blood Tests of the Cows in Group I

Days / Months	April 7	May 22	May 23	June 2	June 6	June 11	June 17	June 24	July 1	July 8	July 12	July 14	July 17	July 26	Aug. 6	Aug. 12
Cows																
1	..	..	+	+	—	—	—	—	—	—	—	..	—	—	—	..
2	..	..	+	+	—	—	+	+	—	+	—	..	—	—	—	..
3	..	..	+	+	+	—	—	—	—	—	—	+	+	—	—	..
4	..	..	+	—	+	—	..	..	+	—	+	—	—	—	—	..
5	..	..	+	+	D	..	..	..	..	..	..	..	..	..	..	..
6	..	..	+	+	D	..	..	..	..	..	..	..	..	..	..	..
7	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	+	..	..	—	—	—	+	..	D	..	..	..	..	..
9	..	..	+	—	..	—	..	..	..	..	..	..	..	..	..	..
10	+	+	D	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	—	—	+	—	+	—	—	—	—	..	—	—	+	+
12	..	..	—	—	—	—	—	—	—	—	—	..	—	—	—	—
13	..	+	D	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	—	—	—	—	—	+	+	—	—	..	+	—	—	..
15	..	..	—	+	+	—	—	+	—	—	—	..	—	—	—	..
16	..	..	—	+	+	+	—	+	+	—	—	..	+	—	—	..
17	..	..	—	—	+	+	—	+	—	+	—	..	+	—	—	..
18	..	..	—	—	+	—	—	—	—	+	—	..	+	—	—	..
19	..	..	—	—	—	+	—	+	+	+	+	—	—	—	—	..
20	..	..	+	—	+	+	—	+	+	+	D	..	..	..	..	..

D=Death of animal. +=Positive test. —=Negative Test. ..=No test made.

owners in this vicinity. Twenty young cows were placed on a small ranch about 9 km. from Guayaquil, on the road to the coast, a region infested with ticks. The animals became sick between four and five months after their arrival (table 1). Up to the present, 8 have died.

The treatment consisted of sodium cacodylate in doses of 2.5 Gm./100 lb. of body weight, anaplasmol in repeated series, a 5 per cent physiologic glucosate solution, 2.5 Gm. of caffein, hepatic extract, and vitamins B and C. Some died after a very rapid course, 1 presenting a mixed infection with anaplasma and *Babesia bigeminum*. This was a 2-year-old Holstein-Friesian, and was the first to succumb.

In some of the animals, in spite of treatment, the concentration of parasites increased notably, culminating in death.

Recently, the treatment with neoarsphenamine was applied to 4 of the remaining 12 cows. The parasites disappeared from the blood of these 4 animals, only to reappear in 2 of them after eight days, but the clinical manifestations are not appreciable, and it appears that the animals offer greater resistance to the parasite. The general living conditions are not particularly favorable. There is some dampness in the stables, the food is only fair, and there are always plenty of ticks.

On the other hand, another of the cattle raisers who also has 20 of the young imported cows, keeps them in the city, in a stable with a high brick wall around it. The animals have had no ticks and up to the present time no case of anaplasmosis has developed, although fierce flies (*Stomoxys calcitrans*) are present.

Then there is the intermediate case, where the treatment with neoarsphenamine was tried for the first time. The owner has a group of 8 cows located on his small ranch, about 5 km. from the city, on the same road to the coast. There is a moderate number of ticks. The cows are very well cared for in a new, dry, isolated stable, and are properly fed. The first case (table 2) appeared thirty-two days after the animals arrived in the country, followed by the others on different dates. In the first case, a series of anaplasmol was used and the parasites disappeared from the blood.

TABLE 2—Blood Tests of the Cows in Group 2

Days / Months		March 2	March 14	April 15	May 8	May 21	May 27	June 10	June 12	June 13	June 16	June 17	June 18	June 24	June 25	June 27	June 30	July 1
No.	Cows																	
1	Ocarina	+	—	—	—	..	—	..	..	+	—	..	+	—	—	—	..	..
2	Aroma	..	—	+	—	+	..	..	..	—	—	..	..	—	..	—	..	—
3	Penelope	..	—	—	..	..	—	+	..	+	+	..	—	..	..	..	D	..
4	Goleta	..	—	—	..	..	..	—	..	—	—	..	..	..	..	..	..	..
5	Blondine	..	—	—	..	..	..	—	..	—	—	..	..	+	+	—	..	..
6	Bermuda	..	—	—	..	..	..	+	..	+	+	+	—	—	—	+	..	..
7	Ruleta	..	—	—	..	..	..	—	..	—	—	..	..	..	—	..	..	..
8	Sirena	..	—	—	..	..	..	..	..	—	—	..	..	..	..	..	+	+

D=Death of the animal. +=Positive test. —=Negative Test. ..=No test made.

TABLE 3—The Injection of Neoarsphenamine into the Cows of Group 2

Days / Months		June 10	June 11	June 12	June 14	June 16	June 17	June 23	June 24	June 25	June 30	July 1	July 2	July 7
No.	Cows													
1	Ocarina	1.8	2.7	6.0	2.4	..	..	..	..	..	..	..	..	..
2	Penelope	1.8	2.7	3.6	4.8	..	..	..	..	..	..	..	..	..
3	Bermuda	1.8	2.7	3.6	2.4	..	..	..	..	..	..	..	..	..
4	Blondine	..	..	..	..	..	..	2.7	4.5	6.3	..	..	..	..
5	Sirena	1.8	2.7	..	..	..	..	..	..	2.7	4.5	6.3	..	..
6	Aroma	..	..	..	..	..	..	..	..	..	..	..	..	2.7
7	Goleta	..	..	..	..	..	..	..	..	..	..	..	..	..
8	Ruleta	..	..	..	..	..	..	..	..	..	..	..	..	..

Numbers indicate grams of Neoarsphenamine. These are fractioned, as ampules of 0.90 Gm. of substance were always used, these being the only kind available in Guayaquil, Ecuador. Both Squibb and Abbott products were employed.

After June 1 (table 3), neoarsphenamine was used on this group of cows.

In the blood tests made on the day following each injection of neoarsphenamine, parasites were still observed, after an exploratory treatment with daily doses of 1.8, 2.7, 3.6, 4.8 Gm., and others (*see* table 3). Then, to shorten the period of treatment and work on the parasites with more energy, stronger doses were employed, beginning with 2.7 Gm., then 4.5 Gm., and terminating with 6.3 Gm. on the third day of the treatment. With this dosage, the parasites disappeared, as a rule, on the day following the third treatment. Only in the case of 1 cow were parasites found in the blood on the third day after the final injection, but they had disappeared on the fourth day. The animals stood this dosage very well, and showed no signs of albuminuria, or any intolerance whatsoever.

The only inconvenience connected with the administration of this medicament is that it must be injected intravenously, and as promptly after preparation as possible, to prevent its oxidation.

After the treatment with neoarsphenamine, the animals recover quickly, as it generally develops an energetic tonic action.

In 2 cases, a transfusion of 500 cc. of citrated blood was given, the animals demonstrating considerable reanimation after the blood transfusion, and one of them was soon perfectly well. The other developed pneumonia during the period of convalescence and died of pulmonary gangrene, as the animal rapidly reached a low physiologic level due to the anemia of anaplasmosis.

In the treatment of this disease, we have recently introduced the system of administering large doses of sodium cacodylate, treating various cases with daily injections of 125 cc. of a 30 per cent solution—100 cc. intravenously and 25 cc. subcutaneously. No intolerance was noted in these cases, but the treatment is costly to the system.

It is hoped that before very long we may be able to determine which medicament offers the greatest advantages in the struggle against anaplasmosis, since the real campaign against ticks has not yet commenced, and this disease is the worst menace found in the coastal region of Ecuador to the imported breeds of cattle.

Avian Pneumoencephalitis in in Ducks and Geese

Asplin, of the government veterinary laboratory at Weybridge (England), observed that although most ducks and geese exposed to outbreaks of avian pneumoencephalitis remained apparently healthy, many of them contracted active but subclinical infection. Artificially exposed ducks and geese became infective to chickens after an incubation period of three to four days, with infectivity persisting up to four days. Attempts to demonstrate a carrier state in these birds were negative.—*Vet. Rec., 59, Nov. 22, 1947: 621-624.*

Cobalt Increases Effectiveness of Penicillin

Cobalt is being put to several new and promising uses in both human and veterinary medicine (*see* J.A.V.M.A., (May, 1948) : 394 and (June, 1948) : 479). Now, still another use appears possible: addition of trace amounts of this mineral to penicillin, to enhance antibiotic activity. University of California studies (*J. Am. Pharmaceut. A.*, Apr., 1948) showed that adding cobalt chloride to the nutrient agar in test plates increased two- to fourfold the effectiveness of dilute penicillin solutions against *Staphylococcus aureus, Escherichia coli,* and other organisms. *In vivo* studies with mice were comparably encouraging.

Two possible explanations were offered for the complementing action of cobalt: (1) It may so sensitize bacteria as to put them in a physiologic condition readily susceptible to the action of penicillin, or (2) it may have an outright growth-stimulating effect on bacteria, the significance of this being that penicillin exerts its maximum antibiotic power when organisms are in the logarithmic phase of their growth curve.

Whatever may be the explanation, the technique suggests possible benefits that might prove of great economic importance, especially in veterinary medicine, where the cost of penicillin is still a barrier to its widespread use.

Average Eggs per Hen.—The American hen in 1946 laid an average of 154 eggs a year, an increase of 20 per cent over 1940, according to *Better Farming Methods.*

Treatment of Streptococcus Agalactiae Mastitis by Single Injections of Penicillin in Retaining Vehicles

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THE CONTROL of bovine mastitis is a problem which presents many complexities to the dairy industry and the veterinary profession. Dairymen are confronted with the necessity of coping with the incidental and sometimes catastrophic losses entailed through udder infection; while the veterinarian, who because of his specialized training, is alone qualified to conduct proper control and treatment procedures, must use both skill and good judgment to get results and at the same time fit his procedures into the dairyman's routine so as to avoid severe inconvenience to his basic operational procedures.

This present paper will consider only the means by which veterinarians may be relieved of the necessity of administering daily doses of penicillin in treating *Streptococcus agalactiae* mastitis.

Through the efforts of many investigators[1-5] (and others), penicillin has been established as the drug of choice for the treatment of bovine mastitis caused by *Str. agalactiae* or *Staphylococcus aureus*. It is nontoxic in effective concentrations and may be used to treat dry or lactating cows, and acute as well as chronic subclinical cases. It would appear that best results are obtained when large doses (100,000 units or more) are used in single injecton, or when more moderate doses (20,000 to 25,000 units) are given repeatedly at 12- or 24-hour intervals. In other words, treatment schedules must be used which will insure that the penicillin be maintained in the udder for long periods of time if destruction of streptococci is to be accomplished with regularity. The relationship between the bactericidal activity of penicillin and the persistence of therapeutic levels in the udder in the treatment of streptococcal and staphylococcal mastitis has been discussed previously.[6] Evidence was presented showing that the killing of streptococci by penicillin is a fissibactericidal phenomenon, and multiplication of the bacteria is necessary in order for penicillin to exert its effects. It was noted that 0.5 units of penicillin/cc. of milk constitutes an adequate therapeutic level, since 0.1 unit/cc. of the drug quickly destroys growing *Str. agalactiae* cultures.

Other experiments[7] have shown that persistent penicillin levels may be maintained within the lactating udder following instillation of the drug dissolved in specialized water-in-oil vehicles. This effect results from marked dispersion of the drug throughout the gland as a result of the physical characteristics of the vehicle. These studies suggested that a higher percentage of cures might be obtained, following a single treatment of infected quarters, by use of such vehicles than is possible when aqueous penicillin is used.

This paper reports results obtained in the routine treatment of *Str. agalactiae* infections, using penicillin in water-in-oil vehicles.

MATERIALS AND METHODS

All of the results described were obtained in a commercial herd consisting of 500 to 600 milking animals. Only the results of treatment of lactating animals are included. Diagnosis of infection was made by the New Jersey BAI mastitis control program.

Hotis test samples were drawn from each quarter into sterile tubes and forwarded to the New Jersey BAI Laboratory for incubation and microscopic examination of the incubated samples. Reports concerning the status of the quarters were mailed by the state laboratory to one of us (A.W.S.).

The experiment was planned to provide for treatment of all quarters shown to be infected with *Str. agalactiae* without regard for clinical status. Thus, clinical and subclinical cases were routinely treated.

Samples from treated quarters were withdrawn at 10-day and 21-day intervals following treatment, and at monthly intervals thereafter.

To date, 515 quarters of 232 cows have been found to be infected and, of these, 449 quarters of 197 cows have been treated. In the treated group, 395 quarters of 170 cows have been fol-

Parts of this paper were read at the meeting of the New Jersey Veterinary Medical Association on Feb. 5, 1948.

lowed up sufficiently to warrant discussion of results. All animals were milked by machine at twelve-hour intervals, and no attempt at segregation of infected from uninfected cows was attempted. The period of observation on this herd to date has been four months. In this time, about 10 per cent of the previously uninfected quarters have become infected.

The results described, therefore, are a function of a specific treatment technique *vs.* established infection and new infections developing under actual commercial dairy conditions.

The vehicles used have been previously described.[7] They are essentially mineral oil and water emulsified with lanolin derivatives. Vehicle B differs from vehicle A in degree of dispersion of the emulsion.

Infected quarters were treated with a single injection of 100,000 units of crystalline sodium penicillin in vehicle A or in vehicle B. Following treatment, routine twelve-hour milkings were continued.

EXPERIMENTAL

It has been previously mentioned that best results have been obtained when penicillin is given in repeated doses, usually at 12- or 24-hour intervals. The data in table 1, showing the results obtained by certain investigators, illustrate the pattern of results obtained to date when penicillin is given into the udder in aqueous vehicles.

It will be noted in table 1 that some variation occurs in the number of successful treatments obtained over the whole range of single treatment dosages. Thus, in the experiments of Porter, *et al.*,[4] 43 per cent of the quarters infected with *Str. agalactiae* were cured by a single dose of 1,000 units, while 63 per cent of the quarters given 100,000 units in a single dose were cured. In general, a higher percentage of cures is obtained by a single treatment when larger amounts of penicillin are given,[3,4] and best results are obtained when dosages are arranged to insure a persistent level over a rather extended period.[1,5,8-10] In order to accomplish this when an aqueous vehicle is used for the instillation of penicillin, it is necessary to resort to repeated doses of from 20,000 to 50,000 units at each milking interval, or at alternate milkings. Such a procedure is impractical to many veterinarians, and they are forced by pressure of other duties to delegate the dairyman to administer the subsequent schedule of treatment. Such a course of procedure has often been found to be unsatisfactory for various reasons.

Routine treatments of infected quarters with 100,000 units of penicillin in 20 cc. of vehicle A were carried out on 240 quarters infected with *Str. agalactiae*. Hotis tests made ten days and three weeks following treatment showed that 209 quarters (87%) were free from infection. Of the 31 quarters which failed to respond, 27 were retreated with a similar dosage and, of these, 25 became free of infection as shown by subsequent Hotis tests made three weeks following treatment. *Str. agalactiae* persisted in the secretions of two of the quarters treated. These results are shown in table 2.

The results obtained using vehicle A repre-

TABLE 1—Results of Treatment of Streptococcus Agalactiae Mastitis Using Penicillin in Aqueous Vehicles

Investigator	Quarters treated (No.)	Treatments (No.)	Units of penicillin injected	Quarters cured (No.)	Hr. between treatments	Cured (%)
Porter, Campbell, Weber, Reutner	30	1	1,000	13	..	43
	30	1	5,000	11	..	37
	30	1	10,000	13	..	43
	30	1	15,000	16	..	53
	30	1	30,000	15	..	50
	30	1	50,000	12	..	40
	30	1	100,000	19	..	63
Slanetz, Allen	92	1	100,000	66	..	71
Schalm, Casselberry	40	1	100,000	20	..	50
Murphy, Pfau	10	5	10,000	6	12	60
	32	5	20,000	32	12	100
Slanetz, Allen	77	3	20,000	70	24	90.9
	38	3	75,000	35	24	92.0
	18	3	100,000	15	24	83.0
Schalm	19	5	10,000	13	12	68
	39	5	20,000	29	12	74
	4	5	50,000	4	24	100
	12	4	50,000	9	12	75
	22	4	50,000	22	24	100
Schalm, Casselberry	64	5	20,000	..	12	70.3
	53	4	25,000	..	24	92.5
	48	4	50,000	..	24	87.5

sent practical values, inasmuch as more persistent levels of penicillin were maintained in the gland,[7] and a higher percentage of cures were effected following a single treatment, than is possible using aqueous vehicles.

TABLE 2—Results of Treatment of S. Agalactiae Infected Quarters by a Single Injection of Penicillin (100,000 Units) in Vehicle A

Quarters treated	Quarters cured	Quarters not cured
240	209 (87%)	31 (13%)
Quarters not cured above; retreated		
27	25 (92.5%)	2 (7.5%)

It has been shown by Murphy and Pfau,[3] and others, that streptococci may be undetectable by ordinary culture methods for various periods following treatment with penicillin. We have made similar observations which are shown in table 3.

The data in table 3 show the importance of allowing a three-week period to elapse before deciding whether a cure has been effected.

TABLE 3—Appearance of Streptococci in Infected Quarters as Shown by the Hotis Test following a Single Injection of Penicillin (100,000 Units) in Vehicle A

Quarters treated	Results of Hotis test on days following treatment			
	10 days		21 days	
	Neg.	Pos.	Neg.	Pos.
240	234	6	209	31
Quarters retreated				
27	27	0	25	2

Thus, the results obtained from Hotis tests taken ten days following treatment showed only six quarters positive out of the 240 quarters treated, while 31 were found to be infected when tested three weeks following treatment. A similar observation was made when these quarters were retreated. Hotis tests made ten days following retreatment of 27 quarters showed all to be negative for streptococci, while tests made twenty-one days following treatment showed two quarters still infected.

A similar series of treatments was carried out using 100,000 units of penicillin in vehicle B on quarters shown to be infected with *Str. agalactiae* by the Hotis test, combined with microscopic examinations of the incubated samples. It has been previously shown[7] that more persistent levels are obtained following intramammary instillation of penicillin in vehicle B than occurs when vehicle A is used. The improved results of treatment in this series (*see* table 4) were not altogether unexpected in view of the previously noted remarkable persistence of penicillin in quarters injected with this vehicle.

TABLE 4—Results of Treatment of S. Agalactiae Infected Quarters by a Single Injection of Penicillin (100,000 Units) in Vehicle B

Quarters treated	Quarters cured	Quarters not cured
93	85 (91.3%)	8 (5.2%)

Antibiotic coaction between gramicidin and penicillin, *in vitro*, has been described.[11] It was shown that these agents have a more decisive bactericidal action when used together than either possesses alone. With this phenomenon in mind, a series of quarters were treated with 100,000 units of penicillin in 20 cc. of vehicle B, which was fortified with 2 mg./cc. of tyrothricin (containing 25% gramicidin) added in 1 cc. of a propylene glycol concentrate. Sixty-two quarters infected with *Str. agalactiae* were treated. All quarters showed acute inflammation twelve hours following treatment, which persisted for seventy-two hours even though repeated milkings at frequent intervals were resorted to in order to relieve swelling. After this time, all quarters returned to clinical normalcy. Hotis tests taken three weeks following treatment showed 48 quarters (77.1%) free from streptococci and 12 (22.9%) still infected (table 5).

TABLE 5—Results of Treatment of S. Agalactiae Infected Quarters by a Single Injection of Penicillin (100,000 Units) and 40 Mg. of Tyrothricin in Vehicle B

Quarters treated	Quarters cured	Quarters not cured
62	48 (77.1%)	14 (22.9%)

RESULTS

The result of the experiment is difficult to assess. It will be noted that the number of quarters cured by this treatment is less than was obtained when penicillin alone was given in vehicle B. It cannot be determined, however, whether the tyrothricin or the penicillin was responsible for killing the streptococci in the cases cured. Furthermore, due to the numerous milkings resorted to, in order to relieve inflammation in the treated quarters, it is doubtful whether the penicillin exerted its effect for as long a period as is customary when used alone in vehicle A or B. It is obvious, however, that in spite of this, a large percentage of cures was obtained among these severely inflamed quarters.

It is well known that the instillation of

tyrothricin into a lactating quarter may produce more or less inflammation, and it is not surprising that the severe reactions noted in this instance resulted when this agent was incorporated in vehicle B, which characteristically is distributed widely throughout the duct system of the gland.

TABLE 6—Summary of Results of Treatment of S. Agalactiae Infected Quarters by Single Injections of Penicillin in Various Vehicles

	Vehicle	Treated	Cured	Not cured	Not re-treated
First treatment...	A	240	209 (87%)	31 (13%)	..
	B	93	85 (91.3%)	8 (8.7%)	..
	B+ 40 mg. tyrothricin	62	48 (77.1%)	14 (22.9%)	..
Totals 1st treament...		395	342 (86.5%)	53 (13.5%)	..
Retreated...	A	27	25	2	..
	B	18	16	2	..
Totals retreated.....		45	41 (91.0%)	4 (9%)	8
Total of all treament...		440	383 (97.8%)	4	8

A compilation of all treatments carried out in the herd to date (table 6) shows that of 395 quarters receiving a single treatment of penicillin in vehicle A, B, or with tyrothricin in vehicle B, 342 (86.5%) were cured.* Of the 53 quarters not cured by a single treatment, 45 were retreated with penicillin in vehicle A or in vehicle B. Of these, 41 (91.0%) of the quarters retreated were cured by a single retreatment dosage. To cure 383 quarters, 440 treatments were required, with four quarters remaining refractory to two treatments and with eight as yet not retreated.

These results are significant in relation to the infection status of the herd to date (table 7).

The data in table 7 show that during the course of the study (4 months) 515 quarters of 282 cows were found to be infected.

A total of 449 quarters of 197 cows were treated. Of these, 395 quarters of 170 cows have been followed up for a sufficiently long time to observe these results: The treatments resulted in the cure of 383 quarters of 164 cows; 66 quarters of 35 cows have not been treated to date; and 34 quarters of 16 cows became reinfected.*

Deducting the reinfections (34) from the total number cured (383), we have 349 quarters cured out of 515 infected. Out of 232 cows originally infected, 148 were cured as a result of the treatments, while 16 were reinfected.

Expressed in terms of infection status of the herd, of the infected cows which were treated and followed up, 87 per cent were cured, and 64 per cent of all of the infected cows in the herd were cured. Of the infected quarters which were treated and followed up, 88.3 percent were cured, and 67.7 per cent of all of the infected quarters in the herd were cured.

It should be emphasized that segregation of infected cows was not practiced; consequently the results obtained are referable to the effect of treatment only. Studies in this herd are continuing and a program of further treatment combined with segregation is in process. These results will be presented later.

DISCUSSION

The results obtained must be evaluated against the background of the conditions present in the herd under study. As previously mentioned, segregation was not practiced, and only lactating cows were treated. Under these conditions, known infected cows and treated cows were sold for various reasons, or dried off, thus interrupting the collection of data. It is obvious however, that, through treatment,

TABLE 7—Results of Treatment on the Incidence of S. Agalactiae Infection in the Herd

	Infected	Treated	Followed up	Cured	Not cured	Not treated	Reinfected
Cows	232	197	170	164 (148)*	6	35	16
Quarters	515	449	395	383 (349)*	12	66	34

*Minus reinfections.

*A quarter was considered cured if free from *Str. agalactiae* infection three weeks or longer following treatment.

*Five of these reinfections occurred following one first negative test (4 weeks), and before the second test (8 weeks), and the remainder following the second monthly test (8 weeks). The overall new infection rate in previously uninfected quarters in this herd over the four-mouth period of observation has been about 10 per cent. This figure corresponds well with the number of reinfections among the treated cows.

the infection status of the herd has been favorably improved within a short period of time.

The studies described represent a new departure in methods of treatment for bovine mastitis caused by *Str. agalactiae*. The results show clearly that a high percentage of cures can be obtained with a single treatment of 100,000 units of penicillin dissolved in specialized emulsion vehicles, and illustrate the advantage of using vehicles which increase the therapeutic efficiency of penicillin.

By the use of these vehicles, it was possible to reduce drastically the labor involved in successful treatment. Table 6 shows that 440 treatments were required to cure 383 quarters, an incidence of 1.14 treatments per quarter for this group as a whole. The importance of this figure is obvious when it is recalled that repeated instillations of aqueous penicillin have been recognized heretofore as the only reliable method of treatment.

Although the results reported are encouraging, it should be emphasized that treatment is best used in conjunction with adequate physical examination, bacteriologic diagnosis, segregation, and good hygiene. In this connection, practitioners using methods such as we have employed may find it advantageous to treat all infected quarters in the herd, and then segregate those needing retreatment.

The rôle which the water-in-oil vehicles serve in increasing the efficiency of penicillin following a single injection treatment can be ascribed to greater dispersion of the drug into the upper portion of the udder duct system, combined with a gradual release of the antibiotic agent from the water-in-oil matrix to the udder secretion. A combination of these effects results in persistent therapeutic levels in the milk, in spite of routine periodic milkings, which are necessary in order to kill the streptococci in any large percentage of cases on a single treatment. In point of labor and efficiency on the part of the veterinarian, and of economy to the owner, it appears that treatment with penicillin in vehicle B* is the most efficient means yet derived for the treatment of *Str. agalactiae* udder infection.

*Vehicle B is available to graduate veterinarians only through Wallace Laboratories (Veterinary Division), Princeton, N. J., under the name penicle.

SUMMARY

The results of treatment of infection with *Streptococcus agalactiae* in a large group of lactating cows by the intramammary instillation of penicillin dissolved in specialized retaining vehicles has been described.

It was found that penicillin is more efficiently utilized when it is administered in these vehicles.

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Rinderpest in Wildlife

In addition to foot-and-mouth disease in wildlife, epizoötiologists have to reckon with rinderpest among the large game of the jungles. An outstanding example pointed out by Du Toit (*J. South African Vet. M. A.*, June, 1947), was the outbreak of rinderpest in 1890, which all but exterminated some species of the wild fauna (buffalo, waterbuck, warthog, *et al.*). As in the case of foot-and-mouth disease, rinderpest in wildlife is a perpetual menace to livestock.

Parasite Control with BHC

Various reports show that benzene hexachloride (BHC) is finding a wide range of usefulness against many troublesome parasites of farm animals. Although much remains to be learned about its toxicity to warm-blooded animals and man, its killing power has been clearly established in the case of lice on cattle, hogs, poultry, and sheep. It also has been reported to be highly effective against hog mange, sheep ticks, sheep scab, poultry mites, and fleas. Extensive field tests carried out in the southwestern part of the United States have shown that a single application of BHC in pine oil will kill all ear ticks on an animal and that the ears will remain tick-free for over two weeks. Other tests with large animals have indicated that it can be used to fullest advantage by combining it with DDT, the latter having a long-lasting action that ideally complements the quick-knockdown effect of BHC. On a competitive basis with DDT, it has about a 15 per cent superiority in killing houseflies and mosquitoes.

Two principal objections offered against its use are its lingering, musty odor and lack of reliable data concerning its toxicity. Reports emanating from manufacturers indicate that most (but not all) of this unpleasant odor is being eliminated through improved production techniques involving the extraction and use of the *gamma* isomer of BHC. This isomer is highly potent and is not tagged with such a strong odor as less refined preparations. With respect to the second objection to its use *(i.e.,* toxicity), available data suggest that it is about as toxic as DDT and that a great deal of caution should be used in applying it on animals intended for human consumption.

As far as is known, the pharmacology division of the Food and Drug Administration has not yet investigated the toxicity of this chemical agent. In the opinion of Food and Drug Administration authorities, this product, which is being represented as a treatment for hog mange, would be regarded as coming within the statutory definition of the term "new drug" as set down in the federal Food, Drug, and Cosmetic Act. A new drug cannot be shipped legally in interstate commerce until an application with respect to it becomes effective, as provided by that act. As late as Feb. 17, 1948, no such application for use of this drug in hog mange had been received by the Washington office. Furthermore, at least one official of the Food and Drug Administration questions whether BHC can be used safely and effectively against all varieties of mange known to infest hogs. In view of the fact that this drug may be absorbed through the skin, this official also questions whether it can have widespread application in treating hogs that are to be slaughtered for food purposes. He feels the possibility cannot be ignored that enough of this insecticide may be absorbed to affect the flavor of the meat.*

Advice from the Production and Marketing Administration of the U. S. Department of Agriculture warns that both vapor and dust forms of BHC can cause irritation of the skin and eyes, and for this reason handlers are cautioned to avoid inhaling it and to protect skin and eyes while applying it. In this connection, the actual concentration of the drug in spray or dust is an important consideration, because concentrated preparations are apt to be extremely dangerous, not only to human beings, but also to animals. The federal insecticide act does not specifically require poison labels on insecticides, but the labeling of such products may be misleading and, therefore, illegal if these products prove to be injurious to human beings or to animals when applied as recommended by the manufacturers. Inasmuch as a definite hazard is involved in the use of preparations of BHC, labels should bear warning statements which will help users to avoid injury, the USDA has pointed out.

A novel experiment with gammexane (a British insecticide containing the *gamma* isomer of BHC), carried out at the South African Institute for Medical Research over a year ago, suggested that it might prove

Factual statements in this article are based on current scientific data. Opinions expressed, unless otherwise identified, represent the combined views of the Committee on Parasitology and the Committee on Therapeutic Agents and Appliances of the American Veterinary Medical Association.

*According to the Hormel Foundation, meat from hogs slaughtered twelve days following BHC treatment had no objectionable flavors or odors.

feasible to dose host animals orally with gammexane jelled in agar to help control blood-sucking pests—the principle being that the parasites would get a lethal dose while feeding on treated animals. Yellow fever mosquitoes which fed on treated rabbits all died within twenty-four hours and ticks died in ten days after obvious signs of distress. However, the long-range effect on animals exposed to prolonged gammexane dosage was not determined.

From veterinary field tests, it appears that a spray containing 4 per cent of wettable 50 per cent BHC in water (0.25% *gamma* isomer in the spray) may prove useful for hogs; suspensions of 1, 2, 3, and 4 per cent seem to be satisfactory as a sheep dip, while higher concentrations have been recommended for poultry-roost paints.

This insecticide undoubtedly will be promoted widely to farmers and, in the judgment of official AVMA observers, there is reason to believe that not all of the promoters may have the best interests of the livestock industry in mind. For this reason, veterinarians are urged to study the results of experiments so as to be familiar with the BHC concentrations that have, to date, been found apparently safe and effective, along with the concentrations known to be harmful. Until reports from authoritative sources recommend BHC for individual treatment of poultry and for routine use as a spray or dust in poultry houses, it would be well to advise clients to refrain from using it, or to use it sparingly, for such purposes, especially since it has been shown that the musty odor can penetrate poultry flesh as well as eggs, thereby rendering these products unfit for human consumption in some instances. An even more cautious attitude should prevail with respect to its use in small animal practice, notwithstanding that it has been reported (from Australia) as an excellent treatment for sarcoptic and demodectic mange in dogs and for otodectic mange in cats. Likewise, the toxic potentialities of this insecticide must be evaluated carefully through extended tests before veterinarians can give unlimited assent to its use, for either pets or livestock.

By lessening spasticity, curare sometimes unmasks previously concealed posterior column loss.—*Brit. M. J., Feb. 14, 1948.*

Urinary Obstruction in 6-Week-Old Puppy

The subject was a male Cocker Spaniel puppy 6 weeks of age. After gagging and refusing food in the afternoon, it was presented that evening showing moderate tonsil inflammation and pain over the kidney region. The temperature was 100.5 F. No diagnosis was made. The dog's throat was swabbed; 100,000 units of penicillin in wax and 100 cc. of 5 per cent dextrose were given subcutantously.

The next day, there was no change except for apparent weakness in the hind quarters. The temperature was the same. In the afternoon, the animal bloated badly. This was relieved by stomach tube and enemas. The next day the puppy was weak but frisky. It ate a little, but later vomited.

The following day, fluid was present in the abdomen, and tapping produced free urine. The dog was put to sleep and autopsied. No peritonitis was present except a localized area surrounding a pin-point opening at the extreme anterior end of the bladder (at the point of the fetal urachus). The urethral tract was traced to the os penis where a cartilaginous tumor was lodged against the bone. It was slightly calcified externally, about the size of a bee-bee pellet, and presented the appearance of a teat tumor of a cow. It is my belief that it was originally attached to the anterior extremity of the bladder and became dislodged, finally ending up against the os penis and causing obstruction. It may have been a single calculus, although it did not have the gross appearance of one.

With this puppy there was very little vomiting and no evidence of collapse until the last day.—*Don E. Ward, D.V.M., Santa Ana, Calif.*

Benzene Hexachloride

Crude benzine hexachloride, dusted into the hair of dogs at the strength of 5 per cent with an inert buffer, is deadly to fleas. An hour after treatment of dogs infested with *Ctenocephalides canis,* Curt., practically all of the fleas will have dropped dead from the dog's body. Similar results have been obtained experimentally against the tick *Amblyomma americana L.*—*Abstr. Rev. Applied Entomol. Feb., 1948.*

NUTRITION

"Acorn Calves" and Biochemical Mutation

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INDIVIDUALS have been observed in a variety of species whose embryologic development has proceeded irregularly because of gene mutation. There are, for instance, the classical examples of "creeper-fowl" in chickens,[4] "bull-dog" calves in cattle,[1] and many other deformities occurring in livestock. Recently, Hart and his associates[3] have reported studies on modifications observed in newborn calves that are associated with alterations in the usual nutrition of their mothers during pregnancy. These are the so-called "acorn calves" that occur with variable frequency on certain western ranges in unfavorable seasons. Other occurrences of a similar nature are reviewed by Hart in connection with his own work and all agree that abnormal embryos were produced by changes in the diet of pregnant females. Such changes were connected with the withdrawing of such specific growth factors as riboflavin and vitamin A from the food of several domestic and laboratory animals.

The acorn-calf condition, characterized by a marked shortening of the limbs, abnormal development of the skull, arched back, incoordination, and chronic bloating, derives its name from the popular belief that it is due to the excessive feeding of the mother on acorns. Hart, however, has shown that such calves are not restricted to acorn-producing ranges but can arise wherever pregnant cows are kept abnormally long on poor dry feed. While the specific factors involved have not yet been determined, it has been found that the condition can be corrected by proper livestock management, including the feeding of supplemental rations.

In addition, it has been possible to raise these calves to maturity with proper care and then to cross such animals either with normal individuals or with each other. Sufficient data has accumulated to show that normal offspring are invariably produced; and this has led to the conclusion that the condition is not inherited but, rather, is a congenital deformity. While this would seem to be valid from a practical aspect, the recent work of Beadle and Tatum[2] suggests an alternative possibility that might be of interest in interpreting phenomena of this general nature.

—G. H. Hart and Associates

Fig. 1—An example of the so-called "acorn calves" that occur on various western ranges under unfavorable conditions.

In brief, Beadle and Tatum have shown, by using techniques involving the red bread mold, *Neurospora crassa*, that a wide variety of the biochemical activities of organisms are under genetic control. For example, the synthesis of several vitamins and amino acids is now known to be precisely controlled in this way, single genes controlling single steps in the reactions concerned. Mutations of such genes can prevent the formation of the finished molecule with which they are concerned and thus cause the organism to become deficient in materials it ordinarily would manufacture. In this way, strains of Neurospora have been established which have lost their abil-

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The author wishes to thank Drs. E. V. McCollum and G. H. Hart for reading this paper. In addition, he acknowledges the courtesy of Dr. Hart and his associates in supplying the pictures of acorn calves.

ity to synthesize para-aminobenzoic acid, inositol, thiamine, leucine, arginine, and many other specific growth substances. All these deficiencies would of course be lethal were it not possible to supply the missing factors to the organisms by putting them in the culture medium. When this is done, however, these strains can be kept indefinitely and are essentially identical with the wild type in all characteristics including the ability to reproduce sexually and asexually. Offspring of such mutant strains continue to remain indistinguishable from the wild type provided only that they are supplied with the requisite compounds.

—G. H. Hart and Associates

—G. H. Hart and Associates

Fig. 2—Examples of the so-called "acorn calves" that occur on various western ranges under unfavorable conditions.

With this the case, it might be postulated, as an alternative possibility, that the acorn-calf condition is due to one or more biochemical mutations that do not affect the animals carrying them as long as the diet is adequate to compensate for their effects. If this were the case, one might expect, from a consideration of the Neurospora work, that the offspring of animals carrying such biochemical mutations would appear to be genetically normal as long as they were properly fed.

It is of interest that acorn calves occur with variable frequency on different ranges and that is was not possible to satisfactorily reproduce the condition in cows under experimental treatment. Such evidence, while far from conclusive, does suggest that the populations being studied are not genetically uniform regarding the acorn-calf condition. Consideration of such a possibilty might have practical significance in interpreting further studies of the genetics of this and similar occurrences in domestic animals for, as Beadle[2] has noted in contrasting the ascorbic acid requirements of man and the rat, mutations may extend to complete homozygosis in some populations, while in others they may be so restricted that only a small percentage of individuals will be afflicted in populations living under adverse conditions.

SUMMARY

To summarize, it has been suggested that present information makes it possible that the acorn-calf condition in cattle could as well be attributed to the effects of biochemical mutations analogous to those described by Beadle and Tatum in Neurospora as to nonhereditary congenital influences.

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Vitamin A, Not Carotene, the Parent Agent

Investigational work with electron microscopy, which is bringing hitherto invisible things into the range of the human eye, has recently shown, contrary to the established belief, that vitamin A is the parent not the offspring of carotene. Electron microscopists of Vassar College (*Sci. News Letter*, March 13) have disclosed the presence of vitamin A *per se* in plants where it is found to be built into carotene to be stored and then released in the original form within the living body, mostly in the liver. In short, this is the new story of the green and yellow as the provider of that vital agent.

EDITORIAL

Veterinary Relations with Other Groups

Addressing the annual convention of the American Feed Manufacturers Association in Cincinnati, May 6, 1948, President Walter C. Berger said:

Great progress has been made on a national basis between the American Veterinary Medical Association and ourselves. We are in agreement as to our mutual problems, and we will continue to develop and disseminate information for our respective members. In this way a better understanding should result between the veterinary profession and the feed industry.

A year ago there was considerable alarm about baby pig losses, particularly about a so-called new baby pig disease. Many conferences were held jointly with members of the AVMA on this subject. A joint statement was prepared, copies of which were furnished to all our members. This statement was submitted to the Secretary of Agriculture. It was then used as a guide for the special pamphlet put out by the USDA [Save Grain by Cutting Pig Losses. U. S. Govt. Printing Office, 1948.] Nearly three quarters of a million copies were distributed by the various government agencies and the feed industry.

Mr. Berger's comments about AVMA-AFMA relations deserve more than passing attention from all members of the profession, because they signalize an important phase of the activities of organized veterinary medicine. It is a phase devoted to the promotion of friendly, mutually valuable contacts between the veterinary service and the several branches of science and industry upon which animal medicine bears.

There was a time when the AVMA had neither funds nor organizational facilities to coördinate relations between the profession and other groups. In the absence of such a program, it was inevitable that misunderstanding would arise, in some instances creating rifts that have remained until now to be bridged.

Once it may have seemed in order to condemn the county agent who trespassed into the realm of veterinary practice, or to pin unqualified blame for an obscure illness on "faulty feed," or to permit state or congressional legislation unfavorable to the profession to pass unchallenged. But today, there is a different way to handle such problems, thanks to the existence of well-organized state and national associations whose views are respected and heeded in influential circles. The conference table where different viewpoints are brought together, goodwill addresses by AVMA representatives at meetings of other organizations, educational exhibits at public gatherings, appearance of veterinary leaders before congressional committees deciding the fate of bills affecting the profession, intimate contracts with editors, writers, and radio executives—these channels are being used tactfully, sincerely, and with dignity to foster better inter-group understanding and to obtain proper recognition of the veterinarian's work.

On the long roster of activities carried on by the Association on behalf of its 9,600 members, these services are identified under the little understood heading of "public relations." To the uninformed person, this branch of activity may not seem to be the potent force that it is. But to the veterinarian who knows—to the Committee on Public Relations, to the Association's officials, to the hundreds of members who are lending their efforts along this line—it bespeaks the influence, prestige, and respect that every professional man wants.

The Acquitted Brucella

In studies of the mounting incidence of human brucellosis, up to recent times, *Brucella abortus* has been generally bypassed as relatively harmless to the human being, most of the blame going to *melitensis* and *suis*. One among many examples is *"Diseases Transmitted from Animals to Man"* by Thomas G. Hull, Ph.D. (3rd. ed., 573 pp., published by Thomas, Springfield, Ill., 1947), which glibly emphasizes that *"Br. abortus* attacks man *at rather rare*

intervals" without, however, including any supporting evidence to that effect. As a matter of fact, among the many scientific reports on human brucellosis published in medical literature, few include an actual differentiation of the variety of organism responsible for the given case. The hog and the goat are held responsible on circumstantial evidence only. Granted that circumstantial evidence is valid in clinical medicine and scientific research, it would seem that the dairy cow is a too common reservoir of Brucella and the consumption of her products too general to be acquitted in the light of the present knowledge of microbial behavior. As Dr. James H. Steele points out in reviewing the book *(loc. cit.)*, "the low pathogenicity of *Br. abortus* for man is not supported." To that, the pragmatic veterinarians have agreed without a dissenting voice.

For the benefit of all concerned (producer, distributor, consumer), in the long run, it would be better to think of human brucellosis as "cow-borne" than to grope for sources of lesser liability—and go whole-heartedly about the business of eradicating the disease in the bovine species, rather than to becloud the issue. From the economic point of view, independent of public health, the present situation is but a rehearsal of the tuberculosis drama of fifty years ago. The cure may be painful but the sequel will be finer than prolonging the agony.

The Three-Brucella Complex

Introducing the subject of human and animal brucelloses, Prof. John Verge *(Rev. Path. Comp.*, March-April, 1948) gives the following rejoinder to the important question of types:

a) *Brucella melitensis*, discovered by Bruce in 1887, is most pathogenic for man, goats, and sheep, but capable of infecting most all of the other species of animals.

b) *Brucella abortus bovis*, discovered by Bang and Stribolt in 1897, attacks particularly the bovine species in which it provokes abortion and sterility and which can be transmitted to man and horses.

c) *Brucella abortus suis*, discovered by Traum in 1914 is inherent to swine where it causes abortion in sows and sterility in boars, man manifesting a definite receptivity to it and other animals to a lesser degree.

Whatever may be the type of Brucella involved, the disease progresses at a rate leading to early generalization. Representing a serious menace to the health of man and animals as it now does, brucellosis was well named "disease of the future" by Charles Nicolle who thus showed an admirable understanding of the destiny of infectious diseases. Today, it is obvious that the danger of its transmission has been augmented from year to year. The deep obscurity of the infection and its complexity render the epidemiology doubly difficult: One type of the genus Brucella is capable of infecting different species of animals and the same species is capable of being infected by the three different types of the genus.

Brucellosis is no longer a "disease of the future." It has become more and more alarming; it necessitates the closest coöperation between physicians and veterinarians on both the administrative and technical levels.

Educational Material Available on Animal Experimentation

To help inform the public regarding the rôle of animals in medical progress and the necessity, humane character, and accomplishments of animal experimentation, the National Society for Medical Research offers to graduate veterinarians copies of the various pamphlets and reprints on a variety of topics by outstanding authors. The titles of some of these are:

Are Animal Experiments Needed?
The Debt of the U. S. Army Soldier to Animal Investigation.
Horses and the World of Medicine.
The Value of Research with Animals.
Medical Progress in Danger—Please Help.
Medicine's Fifth Column.
Mice—Or Men?
The Prevention of Cruelty and the Work of a Great Humane Society.
Antivivisection Propaganda Handicaps Science.
Operation X—Survival.
From 606 to Sulfa.

Also available is an outline for a talk by qualified medical and veterinary personnel on experiments on animals.

In view of the not infrequent occasions when individual veterinarians are called upon to discuss various phases of animal experimentation, or to substantiate the need for it, the educational material referred to can be of great value. Requests for copies or supplies of the pamphlets and reprints should be addressed to the National Society for Medical Research, 25 East Washington St., Chicago 2, Ill.

CURRENT LITERATURE

ABSTRACTS

Investigations on Cystic Degeneration of the Ovaries in Cattle

The hypophyses were examined from 36 cattle with a normal fertility and from 27 cattle with persistent ovarian follicles or ovarian cysts. In both groups, most of the animals were in the seventh (or later) month of lactation. There was no difference in specific gravity of the hypophyses between normal cattle and those with ovarian cysts nor did age appear to be a factor. In the animals with cystic ovaries, the hypophyses had absolute and relative weights of 4.1091 and 8.1130 Gm., respectively, as compared with 2.955 and 5.852 Gm. for normal cows. The weight and volume of the anterior lobe, compared with the whole gland, was somewhat greater in the abnormal animals than in those with normal fertility.—[*Garm, O.: Norsk. Vet.-tidsskr., 59, (Nov., 1947): 333-364.*]—A.G.K.

Toxoplasmosis in Hares in Denmark

During the years from 1935 through 1947, a total of 2,411 hares were examined. In 211 (8.75%) there was a characteristic postmortem appearance consisting of enlargement of the spleen, enlargement of mesenteric lymph nodes with necrotic foci, degeneration of the liver with miliary necrotic lesions, pulmonary edema, and hyperemia with hydrothorax. Bacterial agents could not be demonstrated either by culture or animal inoculation. Toxaplasms were found in sections of mesenteric nodes, spleen, liver, and lungs of the 21 animals examined histologically. The other animals are considered to have died from toxoplasmosis because of the characteristic postmortem findings. In hares the disease appears to be acute. Most of the cases were found during January, February, and March.—[*Christiansen, M.: Medlems. for den danske Dyrlaegf, 31. 9 pages. 4 figures.*]—A.G.K.

Comparative Values of Avian Leucosis Control Measures

Judging from studies made at the New York State Veterinary College, segregation of chicks from older birds may not be such a strong point in leucosis control as some observers have suggested. In two trials, White Leghorn chicks were raised to 4 months of age in association with pullets or hens, yet during the first year of life there was no appreciable difference in the incidence of leucosis between these groups and control groups reared in isolation. Likewise, continuous exposure for nearly four months to gases from droppings undergoing decomposition did not materially increase the incidence of this disease. Ultraviolet radiation and differences in temperature of nearly 16 degrees F. between rooms in which separate groups were reared had little bearing on the number of cases, and whether the progeny were of random-bred or inbred males made little difference. Attempts to disturb the hematopoietic tissues by repeated bleedings over a period of about two months also were without effect on the incidence of leucosis.—[*C. W. Barber: Studies on the Avian Leucosis Complex. I. The Effects of Rearing Environment on the Incidence of Leucosis Among White Leghorn Chickens. Cornell Vet., 37, (Oct., 1947): 349-367.*]

Methods of Increasing Fertility in Domestic Animals

"It is difficult to discuss a subject about which we have so many half truths and so few facts. . . . A vast amount of uncontrolled work has been attempted and sketchily reported."

After a few introductory remarks of which the above are samples, Dr. M. G. Fincher reviews the work with hormones, the early diagnosis of freemartins, hereditary influences, pathology, and some of the hormone therapy of cases of infertility in the female and the male—mostly the cow and the bull.

The pamphlet is a careful and complete summary of our knowledge of the causes for and the correction of, reproductive irregularities in farm animals. It is not only a review of results of experiments reported in the 23 references listed, but an application of the findings in experimental animals to actual cases presented in an extensive farm practice, and a critical analysis of the effects of such treatment.—[*M. G. Fincher, Ithaca, N. Y.: Methods of Increasing Fertility in Domestic Animals. Transactions of the American Society for the Study of Sterility, (1946): 1-17.*]

Differentiation of Streptococcus Equi and Related Hemolytic Streptococci

The frequent association of *Streptococcus equi* and *Streptococcus pyogenes* groups A and B in the streptococcal infection of horses tends to mislead when a diagnosis is made. The infection with *Streptococcus pyogenes* is often erroneously diagnosed as strangles. Therefore,

it is important to readily identify the causative agent by means of simple cultivation. For such a purpose, the authors devised an endoagar plate containing blood.

On this culture medium, the lactose-fermenting *Streptococcus pyogenes* groups A and B develop a deep red colony surrounded by a clear hemolytic zone thirty-six to forty-eight hours after inoculation, while the colony of the lactose nonfermenting *Streptococcus equi* remains colorless.—[*H. Suto and H. Kawaguchi: Culture Medium Suitable for the Simple Differentiation Between Streptococcus Equi and Its Related Hemolytic Streptococci. Jap. J. Vet. Sci., 7, (1945): 5.*]—K.F.B.

Bovine Salmonellosis

Septicemia of adult cattle caused by *Salmonella enteritidis* (Gärtner's bacillus) is a public health problem of grave importance because of the danger of human alimentary infection. The authors deplore the neglect of this disease in Russian veterinary education.

In a five-month period, of 42 specimens sent to the laboratory for anthrax examination, three were positive for anthrax, one for blackleg, and four yielded pure cultures of *S. enteritidis*. The diagnostic material from the cases of salmonellosis consisted of three spleens and one ear received from four different farms.

In every case of death or emergency slaughter of cattle on the farm, when the examination for anthrax is negative, it is recommended that bacteriologic examination for *S. enteritidis* be required by law.—[*S. P. Ilyinov and L. A. Bogoyavlenskaya, Kazakstan Veterinary Research Institute: Gärtner Infection of Adult Cattle. Veterinariya, 24, (Sept., 1947): 42.*—R.E.H.

Equine Fistulous Withers

Fistulous withers is a condition found chiefly in rural horses. It is primarily a chronic proliferative bursitis (supraspinous bursa) characterized by the development of a tough connective tissue sac distended with an abundant exudate so that an abscess-like structure is formed. Three theories have been suggested to explain its etiology: the principle of mechanical injury, infection of the ligamentum nuchae with *Onchocerca cervicalis*, and bacterial infection.

Bacteriologic studies indicate that the cause is a double or a complex infection with *Brucella abortus* or *Brucella suis* and *Actinomyces bovis*. The channels by which these infections reach the respective bursae are obscure.

Treatment must be determined by the changes that have occurred in the affected structures, since no 2 cases are alike. No benefit was observed from the use of Brucella vaccine. Removal of necrotic tissues and establishment of complete drainage of all sacs or pockets of the infected bursa are basic steps in the treatment.—[*L. M. Roderick, Alice Kimball, W. M. McLeod, and E. R. Frank: A Study of Equine Fistulous Withers and Poll Evil. Am. J. Vet. Res., 9, (Jan., 1948): 5-10.*]

Ophthalmoscopy in Equine Infectious Anemia

The author observed minute punctate and striate hemorrhages of the retina in a significant (but unspecified) number of cases of infectious anemia. The hemorrhages were observed in acute, subacute, and chronic cases, and during remissions. The hemorrhages of the retina frequently occurred in the absence of the usual petechiae on the tongue and conjunctiva. In the examination of 200 healthy horses, the only retinal hemorrhages found were attributed to injuries of the eye and head. They differed in size and form from those of infectious anemia. The retinal hemorrhages of piroplasmosis were differentiated by their size and intensity. The optic fundus in 2 cases of encephalomyelitis showed a bright red congestion of the optic papilla.—[*Kh. Hizatullin, Kazan Veterinary Institute: The Diagnostic Value of Examination of the Optic Fundus in Infectious Anemia of Horses. Veterinariya, 24, (Sept., 1947): 17.*]—R.E.H.

Histopathology of Equine Infectious Anemia

The histologic changes in equine infectious anemia in the Leningrad district are described. There was a marked activation of the cells of the reticulo-endothelial system in the liver, kidney, spleen, and myocardium. The proliferative foci were composed of histiocytes and lymphoid elements. Eosinophils were seen in the spleen in chronic cases. Neutrophils were not present in any organ in any form of the disease. Coarse, granular deposits of hemosiderin were present in the Kupfer cells of the liver and in the Malpighian corpuscles in the kidney. In chronic cases, the spleen contained less than the normal amount of hemosiderin.

Differential diagnostic features of the histopathology of eleven other diseases (623 cases) are given. They were distinguished from infectious anemia by: (1) weak reticulo-endothelial reaction, (2) presence of neutrophils in areas of cellular infiltration, and (3) diffuse, rather than granular deposits of hemosiderin, and hemosiderinuria.—[*A. I. Fedorov, Azerbaijan Agric. Inst.: On the Importance of Histological Examination in the Diagnosis of Equine Infectious Anemia. Veterinariya, 24, (June, 1947): 8.*]—R.E.H.

Prolapse of the Omentum Following Castration in Stallions

Two cases are reported by B. Strzelecki. The first horse ate a good meal after the operation. Five hours later, the animal became restless and a 25-cm. long piece of the omentum was seen protruding through the operation wound.

Peritonitis developed and two days later he was brought back. The prolapsed part of the omentum was excised and the horse was sent home to die. Instead of dying, he regained his appetite two days later and a week afterward he was able to visit the fair. In the second case, the omentum was seen to prolapse before the operation was concluded, and it was excised under sterile precautions. No complications were seen to develop, and within ten days the horse was able to return to work.—[*B. Strzelecki: Prolapse of the Omentum Following Castration in Stallions, Medycyna Weterynaryjna, 3, (1947):737-738.*]—L.I.H.

BHC and DDT for Sheep Scab

Benzene hexachloride (BHC), alone or in combination with DDT, readily controlled psoroptic sheep scab (*Psoroptes communis* var. *ovis*), but DDT alone was markedly inferior against this parasite. For prevention and eradication, 100 per cent efficiency was achieved by either (1) double dipping at a fourteen-day interval in 0.05 BHC dips (emulsion or suspension) or (2) single dipping in a BHC suspension dip. The BHC used was a commercial mixture having a *gamma* isomer content of about 13 per cent. Preventive dippings gave protection for a minimum of eight weeks and a maximum of nearly sixteen weeks. A combination suspension dip of BHC and DDT (0.1 and 0.4 per cent, respectively) was highly effective in preventing infestation, the minimum period of protection being eighty-two days and the maximum ninety-six.—[*W. Downing: The Control of Psoroptic Scab on Sheep by Benzene Hexachloride and DDT. Vet. Rec., 59, (Nov. 1, 1947): 581-582.*]

Normal Chicken Hemogram

Avian blood films should be thinner than those of mammalian blood because of the nucleated erythrocytes. The author has found the Giemsa staining method unsatisfactory and recommends the following: The freshly dried film is covered with May-Grünwald solution for three minutes, then diluted with 15 drops of distilled water and allowed to stand for one minute. The slide is drained and given a supplementary stain with Giemsa, diluted at the rate of 1 or 2 drops/cc. of neutral distilled water. The time required varies from twenty to forty-five minutes, depending on the temperature and the lot of stain. The film is washed with distilled water and air-dried without blotting on filter paper. The blood count of a normal chicken is:

Erythrocytes—3,500,000/cmm., 12 x 7.3 μ.
Leucocytes—40,000/cmm.

Basophils—2 per cent, 9 to 11 μ, nucleus of several segments, cytoplasmic, granules either round or rod-shaped.

Eosinophils—12 per cent, nucleus of one to five segments, cytoplasm bluish, granules small and soft rose in color.

Pseudoeosinophils with round granules—1 per cent, 9 to 13 μ, indistinct, poorly stained, bilobed nucleus, round granules bright red, larger than in true eosinophil.

Pseudoeosinophils with rod-shaped granules—2.5 per cent, two segments of nucleus at opposite poles of cell, granules spindle-shaped, stain intensely red.

TABLE I—Chemical Analysis of the Blood of a Normal Chicken

	Mg./100 cc. Serum	Blood
Calcium	16.0	12.0
Potassium	83.0	154.0
Sodium	282.0	217.0
Magnesium	5.2	6.5
Chlorine	473.0	365.0
Sugar	...	155.0

Lymphocytes—47 per cent, 5 to 10 μ, round, blue cytoplasmic zone, wide or narrow, nucleus round or bean-shaped.

Histiocytes—6 per cent, 10 to 13 μ, nucleus round or bean-shaped, wider cytoplasmic zone than in lymphocytes, nucleus and cytoplasm stain weakly, azurophil cytoplasmic granules.

Monocytes—7 per cent, 11 to 14 μ, resemble histiocytes, nucleus bean-shaped or incised, stains a smoky violet, wide zone of cytoplasm with a foamy or reticulated structure and a smoky blue-green stain with dust-like azurophil granules.

Thrombocytes—30,000 to 200,000/cmm., 4 to 7 μ, nucleus dark blue, resembling nucleus of lymphocyte, cells in groups of 5 to 14 on the slide.

Alkali reserve of plasma: 0.5.

Erythrocyte fragility in hypotonic saline: maximum resistance 0.37, minimum resistance 0.59.

Sedimentation rate: 15 min.—2, 30 min.—10, 45 min.—17, 60 min.—25.—[*M. V. Kydryashov, All-Union Inst. Exptl. Vet. Med., Div. of Physiology: The Hemogram of Chickens, Veterinariya, 24, (Oct., 1947): 29-32.*]—R.E.H.

Medusa Formations in Bull and Stallion Semen

In stained preparations of semen from bulls and stallions the author observed ciliated bodies slightly larger than the head of the sperm cells. In normal bulls these were present to the extent of 1/10,000 spermatozoa. These ciliated forms were shown to be fragments of the ciliated epithelial cells from the efferent tubules of the testis. In animals with epididymitis, chronic orchitis, or aspermia the medusa formations are greatly increased in number.—[*Erik Blom: Medusa Formations in Bull and Stallion Semen and their Diagnostic Significance, Skand. Vet.-Tidskr., 37, (May, 1947): 257-265.*]—A. G. K.

This is a didactic article with no statistical data.—R.E.H.

Normal Ovine Hemogram

The sheep were 18 to 24 months of age, clinically normal, and negative to helminthologic examination. A total of 350 blood samples were drawn, a maximum of 25 being taken from the same animal, at 24-hour intervals. The bleeding was done two hours before the morning feeding. The cytology of each of the formed elements is described.

	Average
Erythrocytes (millions per mm.^{3})	6.077
Hemoglobin (Sahli)	39.0%
Platelets (per mm.^{3})	400,000
Leucocytes (per mm.^{3})	10,025
Eosinophils	8.8%
Basophils	0.0
Neutrophils	
Juveniles	0.1%
Unsegmented	2.5%
Segmented	22.9%
Lymphocytes	61.6%
Monocytes	4.3%

—[*S. A. Abramov: On the Blood of the Sheep. Veterinariya, 24, (June, 1947): 20-22.*] —R.E.H.

Vaccination Against Bovine Pleuropneumonia in Manchuria

For the purpose of preventing contagious bovine pleuropneumonia, the authors vaccinated with virulent bouillon cultures of *Asterococcus mycoides* 4,098 head of cattle in Manchuria. For adults, a single dose of 1 cc. of a culture which had been subcultivated through 100-to-125 generations was inoculated subcutaneously at the base of the tail. The author's opinion is that "the vaccination of animals with live cultures is not only harmless, but also may be considered effectual for the control of this disease."—[*Y. Tajima, T. Nishi, S. Ito, and Y. Takada: Field Experiments on Vaccination Against Bovine Pleuropneumonia with Live Cultures of Asterococcus Mycoides in Manchuria. Jap. J. Vet. Sci., 7, (1945): 17.*]—K.F.B.

Better Milk Through Mastitis Control

The quality of milk available to the American family has been greatly improved during the past twenty years. A certain amount of this improvement must be credited to the veterinary profession for the application of preventive medicine and the reduction of diseases of cattle—the eradication of bovine tuberculosis, the reduction in the incidence of brucellosis among cattle, and the widespread activity in application of procedures which control and prevent the spread of bovine mastitis.

Increased income from mastitis control is achieved by a larger milk yield without a greater number of cows—since, according to some estimates, one fourth of the cows in this country are so seriously infected with mastitis that they produce 20 per cent less milk than they normally would.

"Control of animal disease is never easy, and without knowledge of the animals that are infected, little can be accomplished. That is why early diagnosis of mastitis is so important. . . . To be successful, a mastitis control program must have the coöperation of competent, conscientious veterinarians. The practitioner who has not coöperated—like the cow with mastitis—soon finds himself out of the picture."— [*Notes from a paper presented before the meeting of the International Association of Milk Sanitarians, October 1947, by Dr. H. G. Hodges, as official representative of the AVMA.*]

Paratyphoid Infection of Muskrats

In 1941, there was an epizoötic among the muskrats of a fur bearing ranch near Tokyo; 30 of the infected animals presenting similar symptoms died. The authors identified the bacillus isolated from 3 cases examined postmortem and proved it to be identical with *Salmonella typhimurium*. An interesting note is the fact that nutrias and muskrats were bred respectively in pens separated only by partitioned wire mesh, with *S. typhimurium* being isolated from the fecal debris in all pens. None of the nutrias succumbed to the infection. Apparently these animals have extensive resistance to *S. typhimurium* as compared to muskrats.—[*H. Suto and H. Kawaguchi: Paratyphoid Infection of Muskrats Caused by Salmonella Typhimurium. Jap. J. Vet. Sci., 7, (1945): 225.*]—K.F.B.

Soviet Veterinary Bacteriology

In this review of postrevolutionary accomplishments, the philosophy of dialectical materialism is credited with the refutation of the theory of cyclogenesis in the dissociation of microörganisms. After this concept had been discarded, it became possible to develop an original anthrax vaccine from a nonencapsulated variant.

The complement fixation reaction was brought into wide use in the diagnosis of glanders, dourine, bovine pleuropneumonia, and brucellosis. It has been proposed in equine necrobacillosis. The precipitin reaction is used in the diagnosis of anthrax, a procedure which permits examination of autoclaved samples. The agglutination reaction is in use in the control of brucellosis, infectious equine abortion, pullorum disease, and other salmonelloses. Originality is claimed for a method of diagnostic agglutination in swine erysipelas. In the field of allergenic diagnosis, one Vishnevski is credited with the original suggestion of paratuberculin. Much subsequent research has been devoted to the immunology of glanders.

Soviet investigators have armed the profession with a series of "new and original" vaccines against: sheep pox (aluminum hy-

droxide), hog cholera (crystal violet), bradsot, leptospirosis, swine erysipelas (semifluid formolvaccine), blackleg, calf paratyphoid, lamb dysentery (maternal vaccination), and rinderpest and fowl pox (pigeon virus). Military horses are immunized with tetanus toxoid.

The following antiserums have been introduced in the U.S.S.R: paratyphoid of calves and pigs, colibacillosis of pigs, blackleg, lamb dysentery, tetanus, Aujeszky's disease, and a bivalent hemorrhagic septicemia serum.

Rinderpest was eradicated by means of antiserum and toluol- and formolvaccine. Progress has been made in the elimination of bovine pleuropneumonia by means of a lymphogenous diagnostic antigen, and a culture vaccine. "Massive, very detailed, and long-term experiments . . . have established the fact" of spontaneous clinical and bacteriologic recovery of cattle from brucellosis, and sterile immunity to the disease. In control of calf scours, bivalent antiserum against paratyphoid and colibacillosis is administered in the first twenty-four hours after birth, followed in ten to fourteen days with vaccine. Bacteriophage and acidophilus milk are also used in diarrhea of the newborn.

A method of diagnosis of foot-and-mouth disease by the complement-fixation reaction was developed long before the German work (no dates nor specific references). Several methods of active immunization against foot-and-mouth disease were worked out.

The virus of equine infectious anemia was isolated for the first time in Russia in 1932. It has been investigated with regard to resistance, physical, and chemical properties, insect transmission, premunition, virucidal antibodies, and the diagnosis of carriers.

Equine infectious encephalomyelitis virus was also isolated in 1932. The disease is distinguished from that in other countries by a parenchymatous hepatitis. The Russian virus has been adapted to chicken embryos, contrary to the results obtained by the American investigator, Howitt,* who tested a Russian strain in 1938.

The causative organisms were discovered for leptospirosis of farm animals, stachybotriotoxicosis, and necrobacillosis of reindeer (foot rot).

In the history of veterinary microbiology, there has also been a significant negative aspect. There have been many advocates of a cringing genuflection before everything derived from foreign science. For many years, the pessimism of Western European scientists with regard to brucellosis control influenced the thought of Russian investigators. Only in recent years did soviet science develop aggressive action toward the solution of the problem. Not infrequently, results have been published in Russia verifying doubtful discoveries of bourgeois scientists, which the latter immediately repudiated. Often the publications of soviet investigators do not receive enough attention in Russia. Many investigators, instead of embarking on a course of bold innovation, prefer to follow exhausted methodical lines, heaping up superfluous identical results. Several authors are more desirous of quantity than of quality in their publications. Too little attention has been paid to problems of a general theoretical nature, such as the recent work on the antigenic structure of bacteria, genesis of anthrax immunity, and the nature of brucellosis immunity. In scientific literature there is insufficient criticism and self-criticism, the powerful weapon of the Party.—[*Kolyakov, Y. E.: Thirty Years of Soviet Veterinary Microbiology. Veterinariya, 24, (1947): 16-20.*] —R.E.H.

Isolation of Clostridium Hemolyticum from Bones

A procedure is described by which *Clostridium hemolyticum* has been isolated from bones of animals dead of bacillary hemoglobinuria. The recovery of *Cl. hemolyticum* from bones two years after death of an animal is evidence that an improperly destroyed or lost carcass is a potential reservior of future infections.—[*A. M. Jasmin: Isolation of Clostridium Hemolyticum from Bones. Am. J. Vet. Res., 8, (Oct., 1947): 341-342.*]

Differential Characteristics of Goat and Sheep Carcasses

The atlas and axis may be examined to distinguish between carcasses of goats and sheep. In goats, the atlas is longer and somewhat more slender than in sheep because the wings of the atlas have a less marked lateral curve and the caudal projection is longer than in sheep. In goats the spinous process of the axis is high, fairly sharp, and usually smooth as compared with that of sheep in which the process is usually broad. The anterior end of the process in goats is sharper and about twice as long as in sheep.—[*Eland, H.: Differential Characteristics of Goat and Sheep Carcasses. Norsk. Vet.-tidsskr., 59, (1947):261-268.*]—A.G.K.

*The November, 1947, issue of *Veterinariya* is commemorative of the thirtieth anniversary of the revolution, and is composed entirely of such modest reviews of the activities of the branches of soviet veterinary medicine as the one abstracted herewith. They are obviously written for consumption by a people that has no access to foreign literature. The statement on Beatrice Howitt's negative results with the Russian encephalomyelitis virus was so worded as to lead one to believe that Americans have not developed the technique of chicken embryo culture. Almost all of the achievements listed are adaptations of foreign methods and results to Russian conditions. When originality is claimed, insufficient reference data are included for substantiation.

BOOKS AND REPORTS

Reinfection Tuberculosis in Cattle

This monograph describes vaccination experiments for the control of tuberculosis in cattle. The studies have continued since 1932 and some of the material presented has previously been published. It is proposed that resistance to new infections is maintained only as long as a primary lesion contains viable tubercle bacilli. The primary or vaccination lesion is produced by use of a strain of such low virulence that it is incapable of producing generalized disease following subcutaneous injection. The Vallée strain used in the work is of bovine origin. It only occasionally causes generalized disease in guinea pigs. In calves and adult cattle it produces only a local abscess and involvement of the regional lymph nodes. Reinfection with the strain produces similarly restricted lesions. Cattle vaccinated by this method were found to resist natural infection when placed in contact with infected animals and also when inoculated with virulent bovine tubercle bacilli. However, several animals with brucellosis developed tuberculous mastitis which is taken to confirm the views that brucella infection of the udder predisposes to tuberculosis of that gland.

In an experiment with guinea pigs it was found that vaccination with dead tubercle bacilli produced no local lesions or involvement of regional lymph nodes and that living but avirulent vaccine such as Freidmann's or B.C.G. produced only a local lesion which healed. Guinea pigs treated with these vaccines, had little resistance to virulent tubercle bacilli as compared to guinea pigs vaccinated with the Vallée strain which produced a persistent local lesion and involvement of regional lymph nodes. —[*Reinfection Tuberculosis in Cattle and the Effect on the Resistance. By E. Graub. 82 pp. S. Karger, Holbeinstrasse 22, Basel, Switzerland. 1947. Price not given.*]—A. G. K.

A. G. K.

Elevage et Médecine du Chien

This up-to-date treatise on the breeding and treatment of the dog opens with an impressive foreword by an experienced family physician and breeder of dogs, who is qualified to compliment the author for his knowledge of breeds and the "bedside" manners expected of a veterinarian in the presence of the sick. No time is wasted on internal anatomy in order to dwell in detail on the exterior prototypes of perfection and faults of various breeds in respect to tail and ears, the legs and paws, the teeth, and standard size. Alimentation and scientific nutritive requirements, kennel hygiene and construction, training of home and gun dogs, promotion of societies, clubs and shows, canine psychology, and directions on reproduction are the kind of directives that underwrite good husbandry. One-half of the book is devoted to the sort of pathology and medicine breeders ought to understand in order to establish advantageous relations with scientific men called in in time of need. A final chapter on restraint for various purposes and the administration of medicine completes a book of outstanding worthiness.—[*Élevage et Médecine du Chien. By Dr. A. Lebeau, Hôspital Frégis, Paris. 216 pages. 160 illustrations. Vigot Frères, 23 rue de L'École de Médecine, Paris 6, France. 1947.*]

West Indian Veterinary Conference

The inaugural session was held on Feb. 25, 1947, and the closing session on March 5. The subjects discussed include:

Swine fever, which is believed to be spread chiefly by the feeding of uncooked garbage;

Quarantine regulations, and especially their revision toward the new approach made necessary by air transport;

Canine leptospirosis, which has been recently introduced and is being recognized more and more frequently;

Equine encephalomyelitis, an epizoötic disease in pastured animals;

Mineral deficiencies, of which calcium, phosphorus, and magnesium are the most prevalent. Coupled with tick infestation and internal parasites, this malnutrition results in a widespread anemia.

Paralytic rabies, spread by bats, probably accounts for the annual death of approximately 1,000 cattle, mules, and donkeys in Trinidad alone.

Ticks and parasitic helminths are economically important.

Government representatives to the conference came from Barbados, Jamaica, Trinidad, British Guiana, Leeward Islands, and Windward Islands.—[*Proceedings, First West Indian Veterinary Congress, Kingston, Jamaica, B. W. I. The Government Printer, Duke St., Kingston. 1947, 7 p. Price 1 shilling.*]

Johannesburg Livestock Market

The Annual Report (1946-1947) of the Abattoir and Livestock Market Department tabulates the animal receipts, the condemnations and reasons therefor, the abattoir inspections and other activities of the staff members. Meat and Dairy herd inspection constitute the chief activities, the former concerned largely with cysticercosis and the latter with mastitis and tuberculosis.—[*Report of Acting Director, Abattoir and Livestock Market Department, for the period July 1, 1946 to June 30, 1947. By Dr. G. Martinaglia. Johannesburg. 21 pages.*]

Cattle Parasites

This book is a compilation of information gained with reference to the kinds of internal parasites most often found in Oklahoma cattle, the distribution of these parasites throughout the state, and other information upon which the research veterinarians can base further investigation leading to a program for the control of these parasites.

According to this report, abomasal parasites were most common; 95 per cent of the animals examined were harboring Ostertagia spp. Also abundant were *Hemonchus contortus* (87%) and Trichostrongylus spp. (79%).

Parasites of the small intestine were only slightly less numerous with Coöperia spp. found in 84 per cent, followed by Nematodirus spp. (52%), Bunostomum spp. (23%), Moniezia spp. (30%), and Ascaris Spp. (5%).

The cecum and large intestine were parasitized with *Esophagostomum radiatum* in 81 per cent of the cases, followed by *Chabertia ovina* (28%), and *Trichuris ovis* (17%).—[*A Survey of the Gastro-intestinal Parasites of Cattle in Oklahoma. By D. E. Cooperrider, C. C. Pearson, and I. O. Kliewer. Tech. Bul. T-31, Oklahoma Agricultural Experiment Station, Stillwater. 20 p. March, 1948.*]

Some Parasites of Oregon Wildlife

An illustrated bulletin names the more common worm parasites affecting fish, deer, birds, and miscellaneous wild animals of Oregon, several of which are described with pictures. The specimens were collected from 1925 to 1946. Identifications were confirmed by the Zoölogical Division of the U. S. BAI, under the late Maurice C. Hall and his successors.—[*Some Parasites of Oregon Wild Life. By J. N. Shaw, Head of the Department of Veterinary Medicine, Oregon State College. 20 illustrations. 16 pages. Public document.*]

Canadian Report

The excellent work of the Health of Animals Division of the Department of Agriculture can be appreciated from a study of the report of the director. During the year which ended March 31, 1947, not a single report was received on anthrax, sheep scab, rabies, scrapie, pneumoencephalitis (Newcastle disease), dourine, or glanders. There were 2 cases of mange in horses and 75 cases of mange (mostly chorioptic and psoroptic) in cattle.

Hog cholera occurred on two premises in Ontario. Under the slaughter and burial plan, 14 pigs were killed. (Canada has about 5.5 million hogs, of which more than 2 million are in Ontario.) Tuberculin reactors slaughtered reached a total of 3,659, but the testing program was limited by inability to employ veterinarians. Herds under supervision for brucellosis eradication number 2,681 of which 1,779 are listed as free from the disease.—[*Report of the Veterinary Director General for the year ended March 31, 1947. 41-page pamphlet. Edmond Cloutier, Ottawa, Printer to the King's Most Excellent Majesty, 1947.*]

Chinchilla Diseases

This is a compilation of the facts known about the Chinchilla, its breeding, management, and feeding. Realizing that information on this subject is meager, it seems doubly valuable to have all of the known facts assembled for ready reference.—[*The Chinchilla and Its Diseases. By R. W. McIntyre, D.V.M., Los Angeles County Livestock Department, Los Angeles 11, Calif. 6 pages, mimeo.*]

History of a Swamp in Algeria

Histoire d'un Marais Algérien, published by the Pasteur Institute of Algeria, is a book of 295 profusely illustrated pages on the transformation of a vast area of swamp land, long abandoned to mosquitoes and malaria, into fertile, arable farms. The swamp, known as Marais des Ouled Mendil, is a tract 100 kilometers long and averaging 15 kilometers wide. It is located in the region of Algiers which was given to the Pasteur Institute for experimental purposes in 1927—a tract of impregnable woods, stagnant water, and jungle brush and plains "as left by the last of the Roman plows." Adjacent to a famous investigational laboratory, no scientific research of modern times could have had an equivalent setup for the study of tropical fauna and flora and their relations to human and animal diseases. Those who read French and are interested in gigantic engineering projects, carried out in the process of rehabilitation of swamps, will be fascinated by the text, the maps, and the graphic pictures of this book.—[*Histoire d'un Marais Algérien (History of an Algerian Swamp). By Edmond and Etienne Sergent, Pasteur Institute of Algeria. 295 pages. Maps, charts, illustrations. Pasteur Institute, Algiers, Algeria, 1947.*]

Fur Farming For Profit

Written for fur farmers and students, this book presents the fundamental principles and important problems of raising fur-bearing animals. Only one chapter deals with the treatment of disease, but throughout the book stress is placed on the importance of sanitation in disease prevention. The keynote in this subject is sounded by the statement: "Insuring sanitation and preventing disease are functions of the fur farmer, but for the treatment of disease the services of a competent veterinarian or specialist should be obtained. The diagnosis of disease and the administration of potent drugs call for special training and experience, and the fur farmer who undertakes, unaided,

the rôle of veterinarian is likely to come to grief."

Well written, the book makes excellent background reading for any veterinarian whose practice includes work with fur-bearing animals.—[*Fur Farming For Profit. By Frank G. Ashbrook. Cloth, 429 pages, 166 figures. Orange Judd Publishing Co., 15 East 26th St., New York. Revised and reset in 1948. Price $4.00.*]

The Speculum

The College of Veterinary Medicine, The Ohio State University, has issued Vol. I, No. 1 of the *Speculum*, and will send it quarterly to all of its alumni and to every veterinarian in Ohio regardless of the school from which he received a degree.

Speculum is not a new publication in the true sense of the word; it has been the quarterly report of Omega Tau Sigma to its alumni and members for eight or nine years. With this issue, however, the fraternity gives up its personal claims and cedes them to the College of Veterinary Medicine. Other fraternities, and students and alumni who are not fraternity members, will now have equal access to the pages of the *Speculum*.

"It is our hope that, through this publication, we will bring our College a little closer to each and every one of you, so that each one of you will feel that he has a definite stake in our welfare," says Dean Walter R. Krill in his letter to the "Alumni and Friends of the College of Veterinary Medicine."

The editor is Kenneth B. Haas, a junior. He has a full staff of assistants in the several editorial departments.—[*The Speculum, Vol. I, No. 1, Winter, 1948, 40 pages. College of Veterinary Medicine, The Ohio State University, Columbus 10, Ohio.*]

The WVA Bulletin

The *WVA Bulletin*, official organ (monthly, mimeographed) of the Women's Veterinary Association, and edited by Dr. Mary K. Dunlap (MSC '33), Berkeley, Calif., is now in its ninth number (No. 9, May) of volume 1. One of the purposes of the WVA and its publication is to promote "friendship and understanding among women veterinarians throughout the world." To this end, the *Bulletin* tells of the activities of the women's veterinary circle in the United States and other nations, and prints news of professional assignments, civic activities, and family life of individual members and correspondents. It is well-written and capably edited.

The WVA is planning a worthwhile program for their meeting during the AVMA annual meeting in San Francisco, and men as well as women are invited to participate in its program. Anticipating a good representation at the AVMA convention, the Whitcomb Hotel will be their headquarters.

British Journals Available

All periodical publications of the British Medical Association are now obtainable through Grune & Stratton, medical publishers, 381 Fourth Ave., New York 16, N. Y. The journals of interest to veterinarians are: British Medical Journal (weekly), Abstracts of World Medicine (monthly), Abstracts of World Surgery, Obstetrics, and Gynecology (monthly), and Journal of Clinical Pathology (quarterly).

The Journal of the Royal Army Veterinary Corps published at Aldershot, England, is the only veterinary-military journal published in any laguage, so far as we know. The last copy received is identified as Vol. 19, No. 1, November, 1947. It contains 32 pages of illustrated reading material and eight pages of advertisements. The committee on management consists of five officers of the R.A.V.C. The subscription price for members is 7s. 6d. and for others 10s. 6d., single copies 3s. The material portrays no evidence of animal transportation being abolished by the British Army.

Kennel Building and Plans

"Do not judge a man by his fine front lawn or by the amount of his bank account, but by the dog house in his backyard," is Capt. Will Judy's advice prefacing 23 chapters of good information on dog housing. Stressing that dryness, sunlight, and proper ventilation are basic for healthy quarters, the author gives prospective kennel builders a detailed, well-illustrated account of how to locate, plan, build, equip, and maintain a kennel, for 1 or 100 dogs. Attention also is given to landscaping and attractiveness of design. The subject of animal hospitals is touched briefly, obviously not with the intention of telling veterinarians how to build them but of informing dog owners about the excellent services provided. In this connection veterinarians will appreciate the author's several prestige-building references to their profession.

Supplementary data following the regular text furnish valuable suggestions on the use of DDT paint, aluminum stalls, urine-proof floors, asbestos cement boards, and case studies on modern kennels. The only important point not covered is costs, general and specific.—[*Kennel Building and Plans. Fourth Edition. By Capt. Will Judy, editor of Dog World. Cloth 96 pages. Illustrated. Judy Publishing Company, Chicago, 1947. Price $3.00.*]

"The Golden Gate in '48"

THE NEWS

AVMA Research Fellows

Research fellowships were established by the Research Council of the AVMA in 1942. In the foreword of its original announcement it was stated: This project is designed to bring together the organization which has a technical problem to solve, the educational institution where that problem can best be studied, and a graduate student of veterinary medicine qualified to conduct the investigation.

The four principal objectives of the fellowship project have been defined as:

1) To encourage graduate study by veterinary students.
2) To develop more well-qualified research workers and teachers in the varied fields of veterinary science.
3) To stimulate interest in, and adequate financial support of, veterinary research problems.
3) To offer the services of the Research Council in the correlation of veterinary research.

Qualifications.—The Committee on Fellowships of the AVMA Research Council has engaged in numerous and serious deliberations to ascertain the type of graduate student who can profit from such a fellowship, and in so doing aid the profession. Among the qualifications which are considered essential or highly important, the following may be clearly stated.

To be eligible, the applicant must be a veterinarian and a citizen of the United States or Canada.

The candidate must have an excellent scholastic record. Since properly conducted graduate work is more difficult than undergraduate, the reason for reliance upon past performance is obvious.

The candidate should possess the ability to express himself coherently and clearly in his native tongue.

The research-minded individual should have interests outside strictly professional ones.

The candidate should show a desire and a willingness to engage in extra study and research beyond that required by the curriculum; in other words, he or she should have a well-developed "bump of scientific curiosity."

Personality is important but hard to judge. The "grind," the "prima donna," and the intellectual misfit are as likely to fail in research as in any other branch of endeavor.

Younger men are favored because the present type of fellowship is designed to meet their needs.

Stipend.—The stipend of the fellowship is determined by the needs of the individual applicants, the location of the schools at which work is to be done, and other factors. Currently, the stipend ranges from $150 a month upward.

Fellowships are granted upon the basis of individual consideration of each project, of the qualifications of the applicant, of the ability of the school selected to adequately supervise and present research in the project indicated, and the relationship to other problems already under investigation. Grants are made for one year but are subject to renewal.

First Appointment

The first appointment of a research fellow by the AVMA Research Council was made in 1942, and Dr. L. Meyer Jones, then assistant professor of veterinary physiology and pharmacology, Iowa State College, was the recipient of the fellowship. Following is a résumé of Dr. Jones' background and the work he did at the University of Minnesota as a research fellow. Similar summaries about the other research fellows who have been appointed and carried out their work, six so far, will be published in subsequent issues of the JOURNAL.

Dr. L. Meyer Jones

L. Meyer Jones

L. Meyer Jones, professor of veterinary pharmacology, Iowa State College, Ames. Born March 4, 1913; A.B. (1935) zoölogy, DePauw University; D.V.M. (1939) Iowa State College; M.S. (1939) veterinary physiology, Iowa State College; AVMA research fellow at University of Minnesota, two years (June, 1942, to June, 1944); Ph.D. (1945) University of Minnesota.

$2,400 per year to support fellowship provided by Merck & Co. A summary of Dr. Jones' work follows:

During 1942 to 1944, 95 clinical cases of calf pneumonia were treated. They were divided into four groups to receive (1) sulfathiazole, (2) sulfalpyridine, (3) sulfadiazine, (4) no treatment.

The sulfonamide therapy decreased the mortality compared to the control group. The mortality percentages were: sulfathiazole, 16; sulfadiazine, 20.8; sulfapyridine, 25; and untreated, 68.2. Sulfathiazole produced a more rapid recovery, and calves so treated suffered fewer relapses than with sulfapyridine and sulfadiazine.

Values for urinary and fecal concentrations of excreted sulfonamides were determined on 26 patients. The chief toxic condition attributable to sulfonamide therapy was urinary blockage due to sulfonamide precipitation in the urinary system. Signs of toxicity were inappetence, depression, frequent urination with straining, hematuria, restlessness, oliguria leading to anuria; and with sulfathiazole, hyperesthesia and peripheral neuritis.

County Agent-Veterinarian Relations Discussed at Joint Conference

Official representatives of the AVMA and leaders of the National Association of County Agricultural Agents met in Amarillo, Texas, on Apr. 28-29, 1948, to discuss how veterinarians and county agents can work closer, and to better mutual advantage, in rendering their respective services to the livestock industry.

President W. A. Hagan and Dr. A. H. Quin, chairman of the Committee on Public Relations, represented the AVMA, and the county agents' delegation was headed by Mr. S. Stirling, president of the NACAA. Several prominent Texas veterinarians and county agents from Texas and New Mexico joined the round-table discussion and assisted in formulating plans for future activities.

Included were members of the Panhandle Veterinary Association, who took time out from their annual business meeting in Amarillo on April 29 to participate in the conference.

Groundwork for this important meeting was laid in an address by Dr. Hagan before the national convention of the county agents' organization in Chicago last December, wherein Dr. Hagan suggested that the two associations should get "better acquainted, talk over our problems at a special joint session, and work to achieve a more amicable and effective relationship" (*see* JOURNAL, Feb., 1948: 95-98.)

At the conclusion of the Amarillo conference, Dr. Quin who, in coöperation with the AVMA office, has worked persistently and successfully to expand the scope of veterinary public relations, commented that "Executives of the NACAA are anxious to do everything possible to promote better relationships with veterinarians and are especially anxious to see similar joint conferences carried on down to state and county levels by county agents and veterinarians."

An official joint report singled out various

Representatives of National County Agents Association and AVMA Meet

In an important move to promote closer understanding between veterinarians and county agents, this group met in Amarillo, Texas, on April 28. President W. A. Hagan and Chairman A. H. Quin, of the Committee on Public Relations, were official representatives of the AVMA.

Shown in the picture are: (1) Mr. W. K. Frey, Wheeler, Texas; (2) Mr. John Neilson, Stinnett, Texas; (3) not identified; (4) Mr. E. L. Dysart, Channing, Texas; (5) Dr. R. L. Brown, Amarillo, Texas; (6) Dr. Clyde O. Morgan, Amarillo, Texas; (7) Dr. E. A. Grist, College Station, Texas; (8) Mr. M. J. Simms, Dalhart, Texas; (9) Dr. A. H. Quin, Kansas City, Mo.; (10) Dr. W. A. Hagan, Ithaca, N. Y.; (11) Mr. H. M. Nichols, Panhandle, Texas; (12) Dr. R. C. Dunn, College Station, Texas; (13) Mr. Ralph Jones, Wheeler, Texas; (14) Mr. S. Sterling, Silver City, N. M., president, National Association of County Agricultural Agents; (15) Mr. C. O. Reed, Claude, Texas; (16) Mr. Art Bralley, Amarillo, Texas; (17) Mr. W. E. Flint, Lovington, N. M. Also present, but not shown in the picture, was Dr. E. F. Lanham, Amarillo, Texas.

decisions reached at the meeting, including the following:

1) Nationwide surveys carried on by both groups indicate that in most states, relations between county agents and practicing veterinarians are good and are improving, although in a few states the relations are "indifferent." In states where veterinary service is adequate, there is little or no friction. Existing friction is largely on a local basis.

2) Both groups should center maximum effort on the prevention of animal disease. They should work coöperatively, with the county agent being the channel for publicizing the educational program.

3) In all communities where competent veterinary service is available, agents may be of service to producers by advising them to consult the veterinarian about disease problems, and these agents should refrain from serving as "field agents or usage agents for veterinary biological products."

4) County agents should assist veterinarians in getting located in and acquainted in areas that do not have veterinary service.

5) When a dangerous animal disease is diagnosed in a community, the veterinarian should promptly enlist the day-to-day coöperation of the county agent.

6) County agents are full-time, paid government workers, while the practicing veterinarian must rely solely on private fees. If good men are to be attracted to county agent service, pay scales must be adequate, and it is to the advantage of all concerned that government authorities be urged to increase the pay of these agents at appropriate times. The county agent should likewise respect the fact that if the veterinarian is to maintain proper living standards on his private-fee income, it is essential that his services be utilized on all suitable occasions.

Three More Associations Start Broadcast Series

State veterinary associations of Arizona, California, and Connecticut have recently completed arrangements for use of the weekly broadcast series issued by the AVMA public relations department, bringing the total of participating associations to 28 (*see* May JOURNAL, p. 407, for list of participating associations). Several other states report that they have arrangements pending with local stations and that they will start the series as soon as station broadcast schedules will permit.

The Arizona association will be featured over station KOY in Phoenix at 12:15 p.m. on the third Tuesday of each month. The California association's programs will be heard weekly over KQW in San Francisco, on a time schedule to be announced later. Connecticut broadcasts will be on the WTIC (Hartford) Farm Hour, at 6:15 a.m., as station schedules permit.

Ready-to-use scripts on livestock health subjects are issued by the AVMA office in a series of four every month, as a special service to constituent associations. Each script covers about seven minutes of air time.

National Dog Week Observance

American youth will play an unusually important part in this year's National Dog Week observance. In addition to the Girl Scouts, who for several years have featured the responsibilities of dog care and training in their character building and good citizenship program, this year will also see active participation by the Boy Scouts of America and the Camp Fire Girls. The total membership of these three organizations is 3,616,340.

Persons or groups who wish to coöperate in National Dog Week activities in their own communities are requested to communicate with the National Dog Week Office, 424 Madison Ave., New York 17, N. Y.

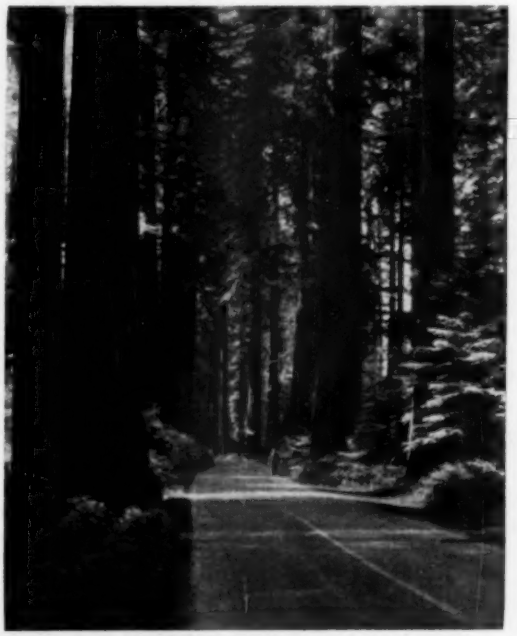
STUDENT CHAPTER ACTIVITIES

Ohio Chapter.—The Junior AVMA of The Ohio State University met on May 5, 1948. After the business meeting, Mr. R. D. Barden, Department of Agricultural Extension, presented a colored motion picture of his cruise through the Georgia Bay country in Canada.

An informal dance and a family picnic were enjoyed by the organization and the Ladies' Auxiliary on May 14 and 28, respectively.

At the next meeting of the Chapter, May 19, Mr. George Smith, member of the Junior

(*Continued on page* 91)



—San Francisco Convention Bureau

Some of the redwoods along the famous Redwood Highway.

Proposed Amendments to Constitution, Administrative By-Laws, and Code of Ethics

The following amendments, presented at the annual meeting of the House of Representatives in 1947, will come up for final action at the 1948 meeting in San Francisco. They were published in the proceedings of the 1947 session (*see* the JOURNAL, Oct., 1947, pp. 329-347) and are republished now for the special attention and study of members of the Executive Board and House of Representatives prior to the annual meeting next August.

PROPOSAL No. 1

[The purpose of this proposal is to integrate membership in constituent associations (state, provincial, territorial and other associations affiliated with the AVMA) with AVMA membership. If this purpose is to be effected several changes are necessary as given below.]

Amend Article III, Paragraph (b) of the Constitution, to read:

The general membership, otherwise known as the active membership, shall consist of (1) graduates of veterinary colleges approved by the Association who are members of their respective constituent associations and who have been duly elected in the manner hereinafter provided, and (2) other graduate veterinarians duly elected in the manner provided by the By-Laws, who live in countries outside of the United States and the Dominion of Canada and who are otherwise eligible but do not or could not hold membership in a constituent association.

Amend Article IV, Section 1 of the Constitution to read as follows:

State, territorial, and provincial veterinary associations of North America, The National Association of Federal Veterinarians, and such other official associations as may hereafter become organized in conformity with the general plan of the American Veterinary Medical Association, and which have adopted the same qualifications for membership, shall be recognized upon application as constituent associations provided such application is approved by a majority vote of the Executive Board.

Amend Article X, Section 2 (a) of the By-Laws as follows: Drop the last sentence and replace with the following:

The application from a member of a constituent association shall contain the certificate of its secretary that the applicant is a member in good standing of that body. In the case of an application from a veterinarian residing outside the United States and the Dominion of Canada, it shall contain the endorsement of two members who know the applicant, one or preferably both of whom shall live in the same country as the applicant.

The American Veterinary Medical Association reserves the right to reject the application of any member of any constituent association.

Replace paragraph (b) of Section 3, Article X, as follows:

Members who have been dropped from constituent associations shall be dropped from the American Veterinary Medical Association on official notification by the secretary of the constituent association and shall be reinstated in the same manner. Whenever a member of this Association is dropped for any reason, the secretary of the constituent association in which he holds membership shall be notified promptly.

Replace Section 4 of Article X with the following:

The applications of candidates who reside outside the jurisdiction of constituent associations shall be submitted to the Executive Board and shall be accepted or rejected by that body at any regular or special meeting. These members shall have all of the rights and privileges and be subjected to the same obligations as other active members except only that they are not required to maintain membership in a constituent association.

PROPOSAL No. 2

[The purpose of this proposal is to increase the annual dues from $7.00 to $10.00, including subscription to the JOURNAL and was recommended last year by the Executive Board to meet the costs of the expanding program of the Association.]

Amend Article X, Section 3(c) to read:

Dues shall be $10.00 a year, of which $4.00 is for payment of one year's subscription to the official JOURNAL of the Association. Dues are payable in advance on January 1 of each year.

Amend Article X, Section 3(d) by striking out "$7.00" and substituting "$10.00" in the third line.

Amend the schedule in the same paragraph for the amounts to be remitted each month, in line with the increase in dues provided by the above.

January	15.00	July	10.00
February	14.17	August	9.16
March	13.33	September	8.33
April	12.50	October	7.50
May	11.66	November	6.66
June	10.83	December	5.83

Amend the last paragraph of Section 3(d) to read as follows:

Of the annual dues of $10.00, $4.00 is to be credited as subscription to the JOURNAL.

PROPOSAL No. 3

[The purpose of this proposal is to bring about greater stability and effectiveness of the House of Representatives as the legislative and business body of the Association by increasing the length of service of House members. This proposal should also be considered in the light

of the arrangement approved by the Executive Board last year by which the AVMA will pay an amount equivalent to one-half of the round-trip railroad fare and pullman expense of one accredited delegate in attendance at the annual meeting of the House from each affiliated association.]

Amend Article IX, Section 4 to read as follows:

Tenure: Members of the House are elected for four years, which means that they shall serve during four consecutive annual sessions of the Association, except that in the beginning, approximately half of the constituent groups shall be designated by the Executive Board to elect for an initial two-year term in order that all terms of office will not terminate at one time.

PROPOSAL No. 4

[The purpose of this proposal is to relieve the president from the duty of presiding at sessions of the House and to add this duty to those of the president-elect.]

Amend Article II, Section 3.—Duties of the president by deleting "and at all sessions of the House of Representatives."

Amend Article III, Section 2, relating to the duties of the president-elect by adding the following paragraph to follow the present first paragraph:

He shall preside at all sessions of the House of Representatives and shall, if desired, present to the House his program for the coming year.

PROPOSAL No. 5

It is proposed to amend Paragraph 7 of the Code of Ethics by adding the following new sub-paragraph g):

g) No member shall willfully place his professional knowledge, attainments, or services at the disposal of any lay body, organization, group or individual, by whatever name called, or however organized, for the purpose of encouraging unqualified groups and individuals to diagnose and prescribe for the ailments and diseases of animals. Such conduct is especially reprehensible when it is done to promote commercial interests and monetary gain. Such deportment is beneath the dignity of professional ethics and practice; it can be harmful to both the welfare of the animal-owning public and the veterinary profession; it violates principles of humane animal care; it may cause great economic loss and endanger public health and is, therefore, contrary to sound public policy.

PROPOSAL No. 6

It is proposed to add the following new subhead to the Code of Ethics following present Paragraph 31, and to number it Paragraph 32 as follows:

PHARMACISTS

Paragraph 32.—Licensed pharmacists should be recognized by members of the veterinary profession and their services should be utilized; but any pharmacist, unless he also be qualified as a veterinarian, who assumes to diagnose and prescribe for sick animals or for the handling of contagious and infectious diseases of animals, should be denied such recognition and support, since his activities may be viewed as prejudicial to the public interest, contrary to laws governing veterinary medical practice, and in violation of state and federal laws made and provided for the control of animal diseases.

If adopted, present Paragraphs 32 and 33 would be re-numbered 33 and 34, respectively.

PROPOSAL No. 7

[The purpose of this proposal is to carry out the recommendation made by the Section on Sanitary Science and Food Hygiene at the 1947 meeting, namely, that the name of this section be changed to "Public Health." In compliance with the recommendation, Dr. Martin D. Baum, present chairman of the section has submitted the following amendment.

As provided in Section 3, Article XIII, of the Administrative By-Laws, relating to amendments, this proposal will be published in three consecutive issues of the JOURNAL and can then come up for final action at the annual meeting in San Francisco.]

Amend paragraph (e) of Section 1, Article XIV, Administrative By-Laws, by changing the words "Sanitary Science and Food Hygiene" to "Public Health."

(Student Chapter Activities—Continued from p. 89)

class in veterinary medicine and national winner of the essay contest sponsored by the AAHA, presented his prize-winning paper, "Ethics in the Practice of Veterinary Medicine," to the organization.

A panel discussion was held on the subject "How Can the Veterinary Profession be of More Service to Your Field?" Participants were Messrs. Gates S. Vickers, Ohio Poultry Improvement Association; Richard Kellogg, Central Ohio Breeders Association (artificial insemination); Larry Kaufman, Department of Animal Husbandry, Ohio State University; and Bill Zipf, farm writer and commentator for the *Columbus Dispatch* and radio station WBNS. Dr. Walter G. Venzke of the department of Veterinary Preventive Medicine, Ohio State University, acted as moderator. Following the discussion, the forum was open to questions from the audience.

Proposed amendments to the By-Laws of the Constitution, presented at a meeting a month previous, were voted upon and passed.

S/DALE D. KEYSER, *Secretary.*

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Colorado A. & M. Chapter.—The Junior Chapter of the AVMA of the Colorado A. & M. College held their annual smoker on Feb. 7. Prizes for boxing bouts were donated by Norden, Haver-Glover, Pitman-Moore, Jen-Sal, Arnold, and Fort Dodge laboratories.

At the Feb. 9 meeting, Dr. R. F. Bourne discussed the geography and history of the Panama Canal Zone and showed colored slides taken while he was there.

Dr. James Farquharson was guest speaker at the meeting on Feb. 23. His subject was "Equine Encephalomyelitis" (with illustrations). Mr. Moss of Pitman-Moore Co. dis-

cussed medical research and showed the motion picture, "Ye Old and Ye New in Medical Research."

On March 1, the motion pictures "Valiant Years," sponsored and produced by Associated Serum Products, Inc., and "The Rôle of Gastroscopy in the Diagnosis and Treatment of Gastric Pathology," filmed by Dr. Hart at Loyola University Medical School in Chicago, were shown.

The motion pictures "Contagious Exanthema in Swine," produced by the California Department of Agriculture, "The Stader Splint in the Fixation of Tibial Fractures," a Navy medical film, and "Therapeutic Uses of Hot and Cold," distributed by the AMA, were shown at the March 8 meeting.

Officers elected at the meeting on March 15 are Dario Marioni, *president* for the fall quarter; and Bill Beer, *vice-president;* Frank Hunt, *secretary;* and Ted Farmer, *reporter* for the spring quarter. The motion picture "Training You to Train Your Dog," distributed by Hawley Lord of New York, was shown at this meeting.

s/FRANK W. HUNT, JR., *Secretary.*

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Kansas State College Chapter.—The 1947-1948 program of the Kansas State College Junior AVMA consisted of 17 meetings each of which featured a well-known speaker and included entertainment and refreshments. Outstanding speakers of the school year were Drs. R. R. Dykstra, dean, School of Veterinary Medicine, Kansas State College; O. W. Morris, Kansas State Board of Health, Parsons; E. J. Frick, head, Department of Surgery and Medicine, School of Veterinary Medicine; W. A. Hagan, president of the AVMA, and dean, New York State Veterinary College, Cornell University; and A. D. Weber, head, Department of Animal Husbandry.

In addition to the regular meetings, the organization sponsored a fall sport dance and a spring semiformal dance, and received a high rating in intramural affairs. A member of the Junior AVMA, Miles Agee, was chosen as the school representative to sit in the UNESCO Council.

The final meeting of the year was on May 18, 1948.

s/HAROLD PEFFLY, *Secretary.*

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(Continued from June JOURNAL)

History of the ISC Student Chapter of the AVMA.—In 1936, the Iowa State College Student Chapter of the AVMA submitted to the Iowa State Board of Eduation, the president of Iowa State College, and the heads of the several departments of the Veterinary Division, a proposal that the veterinary clinic, then nearing completion, be named the Charles Henry Stange Memorial Veterinary Clinic, in honor of the late Dr. C. H. Stange, dean of the Veterinary Division from 1909 to 1936. This proposal was accepted and the clinic, bearing the name recommended, was officially dedicated May 17, 1939.

The first issue of the *Veterinary Student* was published during the fall quarter in 1938. This magazine, official publication of the Iowa State Student Chapter of the AVMA, is published three times each year.

Meetings of the Chapter are held monthly. For each meeting a speaker is secured to talk on subjects of value to future veterinarians. Prior to 1922, members of the Veterinary Society presented technical papers, held debates, and discussed current events at their meetings.

At the first meeting of the school year, the aims and purposes of the Student Chapter are explained, members of the faculty are introduced, and an opportunity is given for the new class to become acquainted.

One of the outstanding social events on the campus is the annual veterinary dance, usually held during the winter quarter. In recent years, the Student Chapter has also sponsored an annual spring sports dance at the Ames country club. Before World War II, an annual banquet was sponsored by the organization. An outstanding speaker was obtained for each banquet.

At intervals through the years, Christmas parties or smokers have been sponsored. The last social event of the year is the annual veterinary picnic. Class rivalry expends itself in a final burst of softball, horseshoe pitching, and various other forms of organized and unorganized athletic activities. The picnic, especially if held in the vicinity of a creek, has often given the lower classmen an opportunity to give the seniors a hearty farewell. Faculty members serve the traditional baked ham dinner.

A well-stocked library has been maintained for many years. The library is now located in the Stange Memorial Clinic. Textbooks, reference books, and files of periodicals in the various fields of medicine and agriculture are maintained in the library.

In 1919, Dean Stange suggested to the Veterinary Medical Society that the Veterinary Division should hold an open house, and stated that the faculty was willing to coöperate with the Society in sponsoring a "Vet Day." The various departments of the Veterinary Division now present exhibits portraying their particular branch of veterinary medicine during the annual all-college open house, Veishea. The Society also enters a float in the Veishea parade and on several occasions has won first prize.

On Jan. 20, 1948, wives of the members of the student Chapter met to organize the Women's Auxiliary of the Iowa State College Student Chapter of the AVMA. The wives of approximately 100 veterinary students became charter members of the new organization.

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History of the Colorado Student Chapter of the AVMA.—The origin of the Junior Chapter of the AVMA at Colorado A. & M. College dates back to September, 1907, when students of the Division of Veterinary Science formed a chapter of the Veterinary Medical Association. The charter to establish a Junior Chapter of the AVMA was granted in 1931. Although there have been alterations and additions, many parts

of the original organization are still in existence.

The objective of the early organization was, as it is today, "to further scientific veterinary investigation and discussion and to increase interest in the AVMA." To accomplish this, each member was required to present a paper each term. These papers instigated scientific investigation and discussion and increased the ability of the members to speak before an assembly. Today, experienced veterinarians, faculty members, and representatives of other professions are invited to appear on the program, and motion pictures on veterinary subjects are presented.

(To be continued)

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X, Section 2.

First Listing

BARRON, CHARLIE N.
104 Davis Street, Bryan, Texas.
D.V.M., Texas A. & M. College, 1943.
J. H. Milliff and R. D. Turk.

BUHARALILAR, NAMIK
208 South Prospect, Champaign, Ill.
D.V.M., Agricultural College, Ankara, Turkey, 1941.
Vouchers: L. E. Boley and R. E. Watts.

CHRISTIE, VICTOR V.
3901 3rd St., S.W., Calgary, Alberta.
M.D.V., McKillip Veterinary College, 1908.
Vouchers: A. C. Blackwood and J. G. Anderson.

DARLING, BENJAMIN G.
Hooper, Nebraska.
D.V.M., Kansas City Veterinary College, 1918.
Vouchers: P. L. Matthews and A. G. Beagle.

FEERS, ALBERT G.
2795 Wynwood Lane, Los Angeles 23, Calif.
M.D.C., Chicago Veterinary College, 1908.
Vouchers: A. K. Carr and J. S. Barber.

DUBRAWSKI, T.
212 Walnut St., Aurora, Ill.
V.S., Academy of Veterinary Medicine, Lwow, Poland, 1939.
Vouchers: L. A. Dykstra and J. G. Hardenbergh.

MCKENZIE, W. A.
755 W. Market, Nappanee, Ind.
D.V.M., Michigan State College, 1940.
Vouchers: C. C. Dobson and W. Garverick.

MAUBERRET, JR., CLAUDE
4627 Iberville St., New Orleans 19, La.
D.V.M., Alabama Polytechnic Institute, 1947.
Vouchers: J. K. MacNamee and H. L. Hillhouse.

MESSER, RALPH L.
40 S. 7th St., Kansas City, Kan.
D.V.M., Kansas State College, 1943.
Vouchers: F. B. Ogilvie and D. Pickett.

MILAKNIS, ANTHONY
3341 W. Evergreen Ave., Chicago 51, Ill.
D.V.M., University of Vienna, 1938.
Vouchers: J. W. Neff and O. Norling-Christensen.

NICHOLSON, WALLACE R.
Weyburn, Saskatchewan.
D.V.M., Ontario Veterinary College, 1942.
Vouchers: L. L. Hewitt and R. P. Waechter.

OLLGAARD, OVE
Gredstedbro, Denmark.
D.V.M., The Royal Veterinary and Agricultural College, Copenhagen, Denmark, 1945.
Vouchers: O. Norling Christensen and J. M. Gillispie.

OSTERHOLTZ, WILBERT E.
P.O. Box 365, Las Vegas, Nev.
D.V.M., Kansas State College, 1935.
Vouchers: W. E. Steinmetz and W. F. Osterholtz.

ROSS, ALAN
2027 24th Ave., Oakland 1, Calif.
D.V.M., Alabama Polytechnic Institute, 1943.
Vouchers: G. B. Henno and B. Turkheimer.

SOMMER, OTTO W.
P.O. Box 141, Gonzales, Calif.
D.V.M., San Francisco Veterinary College, 1916.
Vouchers: J. D. DeMattei and R. E. Duckworth.

SOUAILLARD, PIERRE P.
1309 Columbia, Eugene, Oregon.
D.V.M., Montreal Veterinary College, 1912.
Vouchers: E. R. Storey and G. F. Reid.

TA-JEN, LUI
c/o The Ta Kwong Ming Theater, Nanning, Kwangsi, China.
D.V.M., University of the Philippines, 1946.
Vouchers: A. K. Gomez and T. T. David.

TURNBULL, WILLIAM
Dept. of Public Health, Saskatoon, Sask., Canada.
Ontario Veterinary College, 1925.
Vouchers: J. S. Fulton and F. F. Saint.

WILSON, F. HUGH
124 South St., P.O. Box 21, Rochester, Mich.
D.V.M., Michigan State College, 1936.
Vouchers: R. H. Wilson and H. O. von Rosenberg.

WINGATE, JAMES M.
2818 22nd Ave. S., Nashville 5, Tenn.
D.V.M., Alabama Polytechnic Institute, 1928.
Vouchers: H. L. Fry and E. B. Parker.

Second Listing

Cooney, Raymond E., 1310 Lakeview Blvd., Seattle, Wash.

Elting, Andrew W., Miles City, Montana.

Fabricant, Julius, 117 College Ave., Ithaca, N. Y.

Garcia, Jose, 2805 Flagler Ave., Key West, Fla.

Henry, Perrian R., Comision Mexico-Americana, 5 de Febrero 73, Apartado Postal 751, Mexico, D. F.

Kirkpatrick, Dan Y., 1600 N. Orange Ave., Box 3029, Orlando, Fla.

Klar, John M., 4414 Tarzon St., Los Angeles 33, Calif.

McRory, Orville B., Box 1194, Palm Springs, Calif.

Murnane Jr., Thomas G., 3222 Lemmon, Dallas, Tex.

Rasbech, Niels O., The Royal Veterinary and Agricultural College, Copenhagen, Denmark.

Schulberg, Howard L., 134 E. 82nd St., New York 28, N. Y.

Smith, Robert F., Belleville, Wis.

1948 Graduate Applicants

First Listing

The following are graduates who have recently received their veterinary degrees and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

University of Pennsylvania

RIVERA-ANAYA, JOSE D., D.V.M.
Uruguay Street No. 112, Stop 28, Hato Rey, Puerto Rico.
Vouchers: O. A. Lopez-Pacheco and C. J. Cardona.

Texas A. & M. College

CITTADINO, JOSEPH F., D.V.M.
Box 2624, College Station, Texas.
Vouchers: A. A. Lenert and R. P. Marsteller.

HANCOCK, WILLIAM B., D.V.M.
2832 Avenue "G," Fort Worth, Texas.
Vouchers: R. D. Turk and J. H. Milliff.

Second Listing

Ohio State University

Graham Jr., Thomas L., D.V.M., Main Street, Arthur, Ill.

COMMENCEMENT

A. & M. College of Texas

At the commencement exercises for the A. & M. College of Texas on June 4, 1948, the following candidates were presented for the D.V.M. degree:

Owen Dean Baker
William W. Bay
Louis E. Buck
Glenn C. Butler
Joseph F. Cittadino
Bernard M. Cooley
Don Buford Farrell
Donovan N. Frye
Harold L. Gore
R. N. Gray, Jr.
William B. Hancock
Arthur B. Haws
John A. Hennessy
Edward P. Hornickel
Pierce A. Humble
Hudson Jones
Jerome Kearby
Sam Benson Kelsey
Max Warren Lowe
Green McClain, Jr.
Scott McNeill, Jr.
Robert K. Morris
John J. Parmelee
Elmo E. Petitjean
William R. Porter
Wilbert P. Prejean
Richard K. Ramstein
Albert Roberson
Billy W. Rosser
Earl E. Roth
Robert E. Shell
George C. Shelton
Wm. P. Switzer, Jr.
Lloyd Thomas
G. Carl Thompson
Milton J. Tillery
Willie Lee Trahan
Howard L. Underwood
Merle S. Weedon
George W. Yeager
Robert P. McCoy, Jr.

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U. S. BAI are reported as of May 7, 1948, by Chief B. T. Simms.

TRANSFERS

Theodore N. Beard, from Oklahoma City, Okla., to Nampa, Idaho.

Douglas J. Collins, from Trenton, N. J., to Detroit, Mich.

Louis C. Crow, from Helena, Mont., to Oklahoma City, Okla.

John J. Evans, Jr., from Brownsville, Texas, to Augusta, Ga.

Leo M. Henry, from Chicago, Ill., to Kansas City, Mo.

Aubrey M. Hutton, from Augusta, Ga., to Philadelphia, Pa.

Charles A. Jerome, from Kansas City, Mo., to Omaha, Neb.

Martin Kagan, from New Orleans, La., to Newport, Vt.

Will Larson, from Fort Worth, Texas, to Albuquerque, N. M.

Fred C. Mau, from Mexico City, Mexico, to Chicago, Ill.

Donald Miller, from Albuquerque, N. M., to Washington, D. C.

Alexander H. Munson, from Mexico City, Mexico, to Washington, D. C.

Charles Webster, from Mexico City, Mexico, to Topeka, Kan.

Elwood E. Wodman, from Topeka, Kan., to Mexico City, Mexico.

Merrill L. Wooten, from Sacramento, Calif., to Los Angeles, Calif.

Williard S. Young, from Mexico City, Mexico, to Harrisburg, Pa.

RESIGNED

Robert K. Anderson, Denver, Colo.
Harry G. Beauman, Jefferson City, Mo.
Clark Eugene Burt, South St. Paul, Minn.
Garland A. Bryson, Baton Rouge, La.
Richard, D. Carr, Moultrie, Ga.
James H. Cass, Jr., Fort Worth, Texas.
Philip C. Close, Augusta, Maine.
Albert L. Havlik, Mexico City, Mexico.
Samuel H. Hoffer, New York, N. Y.
Sydney M. Kessler, Albany, N. Y.
Robert L. Kutschbach, Fort Worth, Texas.
Samuel H. Moser, Philadelphia, Pa.
Seymour Rook, Mexico City, Mexico.
William J. Schuck, Baltimore, Md.

RETIRED

Robert E. Holm, Beltsville, Md.
Michael J. Maloney, Philadelphia, Pa.

DEATH

Frank H. Kirwan, Mason City, Iowa.
Frank E. Morgan, Louisville, Ky.

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Congress Passes Meat Inspection Cost Bill.—On May 20, 1948, Congress passed, and sent to the President for signing, the Kem-Gillie bill by which the costs of federal meat inspection will again be paid by the Government, after having been paid the past year by the packers under federal supervision (*see* the May JOURNAL, p. 395). It now remains for Congress to provide the necessary funds, about $12 million, and legislation to effect this has been introduced.

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FDA Strengthened by Congress.—The former power of the Food and Drug Administration to seize goods that have come to rest after an interstate shipment was restored when the House of Representatives offset the Supreme Court decision which limited the authority of the government in that respect. The Senate is expected to approve. The Court had all but nullified the Act by prohibiting the FDA from seizing spurious and misbranded food and drugs once in the hands of recipient jobbers or merchants.

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Examinations for Poultry and Veterinary Coordinators.—Announcement has been made of positions open for poultry coördinator and veterinary coördinator in the Department of Agriculture, Beltsville, Md. Applicants for poultry coördinator must have professional experience in organized poultry improvement work plus appropriate college study, or technical experience, or a combination of such study and experience. Requirements for veterinary coördinator are a full course of study in a recognized veterinary college and professional experience in poultry disease control work. Graduate study may be substituted for part of the professional experience.

Interested persons may obtain information and application forms from most first- and second-class post offices, from Civil Service regional offices, or from the U. S. Civil Service Commission, Washington 25, D. C. Applications may be filed until further notice with the Executive Secretary, Board of U. S. Civil Service Examiners for the Department of Agriculture, Agricultural Research Center, Beltsville, Md.

AMONG THE STATES AND PROVINCES

Alabama

Research Workers' Meeting.—The Animal Disease Research Workers in the Southern states met in Duncan Hall, Alabama Polytechnic Institute, on April 2, 1948, with 90 in attendance. Experiment station workers, teachers, and Department of Agriculture representatives from the 13 states, and several U. S. BAI and Research Administration representatives from Washington were present.

President C. D. Grinnells of North Carolina, opened the program, which was as follows: "Liver Flukes," Dr. Wilford Olsen, Zoölogical Division, B.A.I., Angleton, Texas; "Ecto-Parasites and Their Effect on Egg Production," Dr. S. A. Edgar, Poultry Department, A.P.I., Auburn, Ala. This section of the program was presided over by Dr. Dale Porter of the Regional Laboratory. Dr. H. L. Lucas, North Carolina State College, discussed "Application of a Statistical Analysis to Animal Disease Research Data." Mr. R. A. McGinty, vice-director, Agricultural Experiment Station, Clemson, discussed the "Research and Marketing Act." Dr. E. P. Johnson presided over the section discussing "Newcastle Disease." Major talks were presented by Dr. O. L. Osteen, Washington, D. C., and Dr. E. R. Doll, University of Kentucky, Lexington. Dr. Herman Farley, Oklahoma A. & M., presided over the section on anaplasmosis. Speakers in this section were Drs. Paul L. Piercy, Louisiana State University; Hubert Schmidt, Texas A. & M.; D. E. Howell, Oklahoma A. & M.; G. Dikmans, Zoölogical Division; and Harry Schoening, Pathological Division, USDA, Washington, D. C. Considerable time was given to the discussion of anaplasmosis from the standpoint of its regional importance and relative to the development of a regional project to be supported under the Research and Marketing Act. This part of the discussion was led by Dr. L. E. Hawkins, assistant director, Agricultural Experiment Station, Oklahoma A. & M.

Dr. C. D. Grinnells presided at the business meeting. The constitution and by-laws for the organization were discussed and accepted. Following are the newly elected officers: Drs. A. H. Groth, Auburn, Ala., *president;* Hubert Schmidt, College Station, Texas, *vice-president;* D. E. Howell, Stillwater, Okla., *secretary-treasurer;* and E. P. Johnson, Blacksburg, Va., *director.* Professor J. C. Grimes, Auburn, Ala., serves another year as *director.*

The AVMA was represented at the meeting by Dr. R. C. Klussendorf, assistant executive secretary. An invitation by Dean T. S. Jones, School of Veterinary Medicine, University of Georgia, to hold the next meeting at the Veterinary School at Athens was accepted.

s/W. T. OGLESBY.

California

District Association.—The regular monthly dinner meeting of the Southern California Veterinary Medical Association was held at the Clark Hotel, Los Angeles, on May 19.

The program for the evening was an illustrated lecture by Dr. Oscar G. Ravin (M.D.), ophthalmologist from San Diego. He discussed cataracts, their removal, and pre- and post-operative care.

Members of the Ladies' Auxiliary enjoyed movies of the scenic Southwest.

s/H. I. OTT, *Secretary.*

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Construction of Veterinary School.—Contracts that have been let for construction of the buildings for the School of Veterinary Medicine at Davis provide for the completion in 500 days. The school will open with a restricted

quota of 40 students chosen from applicants registered before June 30.—*From Western Livestock Journal.*

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Dr. Tierstein Writes Veterinary Column.—A monthly veterinary column on the health of horses, written by Dr. Victor Tierstein (Tex. '39) of Los Angeles, is a new addition to the ever-progressive *Western Livestock Journal*, which is issued weekly in newspaper form and monthly in magazine style. Dr. Tierstein's first column appeared in the May, 1948, issue (p. 135) and covered the subject of special saddle trees for Quarter horses.

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Personal.—Dr. Eugene C. Jones, Beverly Hills, was appointed to the State Board of Examiners in Veterinary Medicine, by Governor Warren. He succeeds Dr. Harvey W. Campbell of Santa Rosa whose term expired.

Connecticut

Pre-Veterinary Scholarship Award Established.—An annual scholarship award of $400 was recently established at the University of Connecticut by the First Company Governor's Foot Guard, oldest military organization in the United States. Announcement of the award was made jointly on May 19, 1948, by President Jorgenson of the University and Major-Commandant Gates of the Foot Guard. It will become operative with the beginning of the next college year and the recipient will be selected by the university scholarship committee on the basis of scholastic attainment, citizenship, worthiness, and financial need. More than one recipient may share the award if the committee so recommends.

The scholarship will be supported from the proceeds of the annual dog show sponsored by the First Company Governor's Foot Guard which is held in Hartford and, so far as known, is the only scholarship of its kind. The action of the donor in establishing the award has been commended by university officials and by Henry D. Bixby, executive vice-president of the American Kennel Club.

Florida

Personal.—On May 15, 1948, Dr. Charles T. Bush (MSC '44) was appointed city veterinarian of West Palm Beach and veterinarian for the Town of Palm Beach and the Palm Beach County Health Department. Prior to entering public health work, Dr. Bush was in small animal practice.

Georgia

District Association.—The North Georgia Veterinary Medical Association met in Athens on Feb. 25, 1948, in the Agricultural Building. About 40 veterinarians were present. Dr. W. J. Gibbons, Alabama Polytechnic Institute, Auburn, discussed cattle diseases with emphasis on X disease.

The following officers were elected: Drs. R. F. Thomas, Atlanta, *president;* Roy Grant, Cartersville, *vice-president;* and C. C. Rife, Atlanta, *secretary-treasurer.*

s/C. C. RIFE, *Secretary.*

Illinois

Chicago Association.—Members of the Chicago Veterinary Medical Association and their wives enjoyed the annual banquet at the Casa Nova Restaurant, June 8, 1948. Dr. and Mrs. C. L. Miller were in charge of arrangements.

s/ROBERT GLOVER, *Secretary.*

• • •

Dr. Davenport on Staff of Public Health Department.—Dr. LeRoy Davenport, formerly assistant to Dr. C. E. Fidler, superintendent of the Illinois Division of Livestock Industry, has joined the staff of the Division of Communicable Diseases, Department of Public Health, as a consultant in veterinary medicine.

Dr. Davenport will serve in a consultant and advisory capacity in the development of programs for the control and eradication of diseases transmissible from animals to man and common to both. This initiates for the first time a veterinary service in the Department of Public Health in Illinois.

• • •

New Veterinary Periodical.—*Animal Health Facts*, edited by Dr. C. Don Van Houweling, veterinarian of the Illinois Agricultural Association, is a newsy multigram containing outstanding facts about veterinary medicine that all men ought to know. The March issue touches on the (1) the proposed foot-and-mouth disease research laboratory, (2) chicken and swine tuberculosis, (3) herd control of brucellosis in Illinois, and (4) the reëstablishment of poultry shows under stated rules.

• • •

Newcastle Disease in Turkey Poults.—The state's first reported outbreak of Newcastle disease in turkeys was diagnosed recently in a brood of 500 3-week-old poults, purchased as day-old stock from a source outside the state. More than 25 per cent of the birds died, according to a University of Illinois report. Circular movements of the head, a common symptom in chickens, were not observed in the poults, but other symptoms were typical: gasping, nervous changes, and paralysis of the legs. Possible, but not confirmed, sources of infection were egg transmission, contaminated incubators and sorting rooms, and exposure en route.

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Animals in the News.—Among the programs to bring about a more general and complete understanding of "man and his animals" is the weekly broadcast by Dr. W. A. Young, managing director of The Anti-Cruelty Society of Chicago, and National Livestock Loss Prevention Board, which may be heard over WAAF every Monday at 1:15 p.m. The program was started by Dr. Young more than fifteen years ago.

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The World's Center of Science.—The aggregate work conducted in the resarch laboratories of the University of Chicago, University of Illinois School of Medicine, Northwestern Univer-

sity, Loyola, De Paul, Mundelein College, Armour Research Foundation, the Chicago Museum of Natural History, Museum of Science and Industry, the new Argonne National Laboratories, the Adler Planetarium, the La Rabida Sanitarium's research on rheumatic fever, the John Crerar Library, the Chicago Academy of Science founded in 1857, the Chicago Technical Societies' Council, and some 20,000 technicians, are the subject of a 38-page article in the *Scientific Monthly* which, in effect, gives Chicago the rating of the World's Center of Science.

Indiana

Spring Clinic.—The Michiana Veterinary Medical Association held its spring clinic May 26 at the Wakarusa Sale Barn, Wakarusa, Ind. More than 100 veterinarians from Michigan and Indiana attended with their wives. The program follows:

Dr. R. Worley, Niles, Mich.: "Teat Surgery" and "Rapid Autopsy."

Dr. D. D. Ramsay, LaPorte, Ind.: "Restraint."

Dr. G. W. Jeffries, Bronson, Mich.: "Dehorning by Nerve Block."

Dr. R. W. Westcott, Constantine, Mich.: "Calf Castration."

Dr. R. E. Bigelow, Wakarusa, Ind.: "Correction of Sucking Cows."

Drs. Glen Reed, Lansing, Mich. and Maurice Weldy, Wakarusa, Ind.: "Physical Examination and Sterility."

Mr. V. Stine, Goshen, Ind.: "Dairy Cattle Judging."

Dr. W. A. Mackenzie, Nappanee, Ind.: "Chloroform Anesthesia in Boar."

Dr. E. S. Weisner, Goshen, Ind., conducted the clinic and demonstrations on poultry.

Drs. H. J. Magrane, Jr., Mishawaka, and J. J. Fishler, Elkhart, Ind.: "Physical Examination and Restraint."

Dr. W. G. Magrane, Mishawaka, Ind.: "Intramedullary Pinning of Long Bones."

Drs. A. S. Einoris, South Bend, and W. G. Magrane, Mishawaka, Ind.: "Ear Trimming With and Without Clamps."

Dr. Frank Booth, Elkhart: "Machine Plucking."

Dr. Stanton Williamson, South Bend: "Handling of Moist Eczema."

Dr. K. H. Fraser, Niles: "Dental Surgery."

Drs. Frank Booth, Elkhart, and W. G. Magrane, Mishawaka: "Use of the Gastroscope."

Dr. G. B. Frier, Benton Harbor, Mich.: "Uses for Tonsil Snare."

s/F. STONE.

Iowa

The Waterloo Clinic.—The fourteenth annual clinic of the Eastern Iowa Veterinary Association, Inc., sponsored and managed by the Cedar Valley branch, was held in the Dairy Cattle Congress Hippodrome on May 27 with the zest and order characteristic of these annual displays of clinical veterinary medicine. The details which will be presented systematically at the annual meeting of the Association in Cedar Rapids, October 14-15, are too voluminous for this space. Never dull, even when held in less commodious quarters, the clinic of 1948 will long be remembered as a noteworthy event. The equipment of apparatus, instruments, drugs, loud speaker, and animals for each of the seven sections, together with surgeons, technicians, demonstrators and diagnosticians, not to mention the large audience, made up the kind of galaxy that has made the veterinary service of eastern Iowa something to write books about, these last thirty years.

The sections listed on the announcement (equine, porcine, bovine, ovine, avian, restraint and handy devices), each in charge of a capable manager, give a clear understanding of the medical development for farm animals in that center of extensive animal production. The absence of a canine section, too, has weight in an over-all view of the distribution of the American veterinary service.

• • •

Cedar Valley Association.—The Cedar Valley Veterinary Association met in Black's Tea Room, Waterloo, on May 10. Dr. J. H. Krichel, Keokuk, discussed "Small Animal Practice," using motion pictures to illustrate various operations. He also showed colored movies of his recent trip to Mexico.

s/C. B. STRAIN, *Secretary.*

• • •

East Central Society.—The East Central Iowa Veterinary Medical Society met on May 13, 1938, at the Hotel Tipton in Tipton. After completing plans for the fourteenth annual practitioner's clinic of the Eastern Iowa Veterinary Association, the program was presented.

Dr. I. P. Irwin, Iowa City: "Extensive Use of Brucella Vaccine Intradermally in Infected and Noninfected Herds." Participating in a discussion on this subject were Drs. J. C. Carey, West Liberty; George A. White, Riverside; C. H. Banks, Tipton; Iva Dunn, Atkins; and L. A. Bowstead, DeWitt.

Mr. Earl Geiger, breeder of hybrid swine, Grinnell: "A Long-Time Program for Improvement of Swine Droves by the Use of Hybrid Boars." Leading the discussion on this subject were Drs. V. M. Reinhart, Norway; J. W. Carey, West Liberty; Ralph L. Lowry, Muscatine; and Samuel G. Paul, Clarence.

Dr. J. D. Ray, pathologist, Omaha, Neb.: "Baby Pig Diseases." Dr. Joe W. Giffee, federal veterinarian, Cedar Rapids, led the discussion of Dr. Ray's presentation.

s/O. HAIGHT, *Secretary.*

Kentucky

Great Stallion Practically Sterile.—Assault, winner of $424,195 as a 3-year-old (a record) retired to the stud on the King Ranch farm in Kentucky on account of lameness, was declared all but completely sterile by Dr. Charles E. Hagyard of Lexington. "Less than 1 per cent live sperm cells" was the finding. Assault's book was filled at a fee of $2,500. The bookings were cancelled. He is 5 years old and was raced below his own parity last year, losing weight and pulling up lame from a wrenched fetlock.

Manitoba

Iodine Deficiency.—Commenting, in a letter, on an article on "Iodine Deficiency Disease" by Dr. W. W. Kemp (*Canad. M.A.J.*, Oct., 1947), Dr. J. F. Edwards, Winnipeg physician, tells of his experiences on the subject, which he gained as a breeder of farm animals in the Saskatchewan River Valley and as a physician in other continental areas. Farmers in the Saskatchewan Valley had a hard time raising stock until they learned of the need of small amounts of iodides in the rations, Dr. Edwards observed. Cattle and sheep were born goitrous, hogs hairless, and colts that escaped the diseases of colthood, such as joint and navel ill, generally died within three years. Moreover, iodine-deficient adults were vulnerable to encephalomyelitis, which iodine-fed animals escaped.

Dr. Edwards quotes Dr. R. D. Radeleff (the JOURNAL, Aug., 1946: 129-132), who reduced the mortality of equine encephalomyelitis with sodium iodide in Texas, to illustrate the value of iodine in veterinary medicine. He also cites observations made at Angler, Ont., in the Japanese P.O.W. camp; there it was found that adding potassium iodide to the drinking water resulted in a general increase in weight and a remarkable absence of skin infection. At the Winnipeg General Hospital, the author found that mastoid troubles were more frequent in families who had not used iodized salt. His letter is a strong plea for a true consideration of supplemental iodine for men and animals in vast areas on this continent.

Massachusetts

Millionth Patient Enters World's Largest Animal Hospital.—The total number of animals treated at the Angell Memorial Animal Hospital of the Massachusetts S.P.C.A., 180 Longwood Ave., Boston, since its opening in 1915, reached the millionth mark March 31, 1948, when Bonnie, a 2-year-old Dachshund, arrived with her owner, Mrs. James R. Denning of Newton, Mass. Dr. Erwin F. Schroeder, chief of staff, is preparing to give Bonnie a check up, following treatment of a minor skin ailment not long ago.

Dr. Schroeder and Mrs. Denning with Bonnie.

• • •

State Association.—The Massachusetts Veterinary Association met May 26 in the Paige Laboratory of the University of Massachusetts, Amherst. The program follows:

Dr. Henry Van Roekel, University of Massachusetts: "Report on Activities in Poultry Disease Projects."

Dr. William K. Harris, University of Massachusetts: "Report of the Mastitis Testing Laboratory."

Dr. Donald Wyckoff Baker, professor of veterinary parasitology, New York State Veterinary College, Cornell University, Ithaca: "Parasitism in Farm Animals" (with illustrations).

The film, "Valiant Years," was shown through the courtesy of the Associated Serum Producers, Inc.

s/C. LAWRENCE BLAKELY, *Secretary.*

Michigan

State Association.—The Michigan State Veterinary Medical Association met on June 17-18, 1948, at the Michigan State College, East Lansing. The program follows.

Dr. S. O. Fladness, U. S. BAI, Washington, D. C.: "Animal Quarantines and the Foot-and-Mouth Situation."

Dr. E. A. Benbrook, Department of Veterinary Pathology, Iowa State College, Ames: "Small Animal Parasites" and "Large Animal Parasites."

Dr. C. F. Clark was moderator of a panel discussion, "Cattle Breeding Problems." Others participating in this discussion were Drs. C. F. Cairy, East Lansing; R. D. Hatch, East Lansing; John Quinn, Lansing; M. L. Weldy, Wakarusa, Ind.; and George Moore, East Lansing.

Dr. W. O. Brinker, Michigan State College, East Lansing: "Small Animal Fractures—Intramedullary Splints."

Dr. James H. Steele, U. S. Public Health Service, Atlanta, Ga.: "Public Health Responsibilities of Veterinarians."

Mr. Ernest Bechtel, Larro Research Farm, Detroit: "Dairy Cattle Nutrition."

Dr. J. F. Knappenberger, Ashe Lockhart, Inc., Kansas City, Mo.: "Practice and Professional Problems."

Dr. L. M. Hurt, president-elect of the AVMA, Los Angeles, Calif., and Dusty Miller, Wilmington, Ohio, were guest speakers at the banquet.

A complete and varied program of entertainment was arranged for the ladies.

s/B. J. KILLHAM, *Secretary.*

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Students to be Employed by State Department.—Sometime ago, the State Department of Agriculture requested the Civil Service Department of Michigan to authorize the employment of upper class veterinary students, in good standing with their college, on official disease control projects. The department has recently been authorized to employ 20 such persons for periods not to exceed ninety days in any one calendar year.

At present, plans are being made to utilize such employees on official area tuberculin test work and area brucellosis control projects. The students will be assigned to salaried veterinarians engaged in these activities in the state. According to plan, student assistants will be divided into two groups; one group will be employed six weeks on tuberculin test work, and the other on area brucellosis control work. In midsummer, the two groups will be reversed, so that all students will have had an opportunity to obtain field experience in these types of activities.

s/C. F. CLARK, *State Veterinarian.*

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Change in Curriculum.—Beginning with the class that enters the professional curriculum in veterinary medicine in September, 1949, two years of preprofessional work will be required for entry. Thus, any preprofessional student beginning work this fall must take the two years of work before he may be considered for entry into the School of Veterinary Medicine, Michigan State College.

Required study during the first and second years of preprofessional work will include written and spoken English, biologic science, social science, effective living, history of civilization, literature and fine arts, etc. Students are urged to do supplementary work with farm animals during summers in the early part of the veterinary program and especially during the summer between the third and fourth years of the professional curriculum.

s/C. S. BRYAN, *Dean.*

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Golden Wedding Anniversary.—Dr. and Mrs. Richard P. Lyman, East Lansing, observed their golden wedding anniversary at the Ponce de Leon Hotel, St. Petersburg, Fla., February 16. Among the guests were their daughter, Mrs. J. Barkwell, Grand Rapids, Mich., Mr. and Mrs. Richard P. Lyman, Jr., of East Lansing, and Dr. and Mrs. John R. Mohler, Washington, D. C. Dr. Lyman is the son of Charles P. Lyman, one of the founders of the Veterinary Department of Harvard University and was the first dean of the School of Veterinary Medicine, Michigan State College. He was secretary of the AVMA from 1906 to 1910.

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Champion Cow Responds to Penicillin.—Crest View Toitilla Susan, Holstein-Friesian of Lakefield Farms at Clarkston went in to the records as the highest producing cow ever tested on two-times-a-day milking. At 6 years and 3 months, in her fourth lactation, she ended a 365-day test in March, 1948, with a record of 27,724 lb. of milk, testing 4 per cent fat. Susan, in her third lactation (1946-1947), suffered from mastitis with hard quarter every few weeks which was cleaned up with a series of penicillin treatments.

Minnesota

Avian Pneumoencephalitis Spreading.—"Newcastle Disease Spreading," is the title of an article by Drs. B. S. Pomeroy and R. Fenstermacher in a current issue of *U. S. Egg and Poultry Magazine.* Attention is called to extension of the disease from 13 to 43 counties within the past year, the spreading throughout the state corresponding to the usual course observed since the disease was first recognized twenty-two years ago in Great Britain and the Dutch East Indies. Soon after (1926), it spread to every poultry-raising country of the world. Since its first appearance in the United States two years ago, it has been reported in all 48 states. Directions for coping with the disease are described.

Missouri

Kansas City Association.—J. D. Ray, pathologist of the Corn States Serum Company, addressed the April monthly meeting of the Kansas City Veterinary Medical Association on "Baby Pig Diseases," and J. E. Mosler of Kansas State College spoke on "Anti-Histamines in Veterinary Medicine."

At the meeting on May 18, A. F. Wempe of Marysville, Kan., spoke on "General Practice Problems," and R. L. Anderes of the Jensen-Salsbery Laboratories read the paper on "Diarrhea in Small Animals" which he had presented before the AAHA at Atlanta, Ga., in April.

s/EARL L. MUNDELL, *Secretary.*

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Greater St. Louis Association.—The June 9 meeting of the Greater St. Louis Veterinary Medical Association was held at the Ralston Purina Co. Research Building. Guest speaker was Dr. James Farquharson, Colorado State College, who spoke on "The Art of Diagnosis, Therapeutics, and Surgery" (with illustrations).

s/W. C. SCHOFIELD, *Secretary.*

Montana

The thirty-eighth annual meeting of the Montana Veterinary Medical Association was held at the Florence Hotel in Missoula on June 28-30, 1948. The scientific program follows:

Dr. R. R. Parker, director, Rocky Mountain Laboratory, Hamilton: "A General Survey of the Q Fever Problem."

Dr. L. P. Doyle, Department of Veterinary Medicine, Purdue University, LaFayette, Ind.: "Diseases of Young Pigs" and "Diseases of Older Swine."

Dr. R. A. McIntosh, head, Department of Veterinary Medicine, Ontario Veterinary College, Guelph: "A Commentary on Clinical Cases" (with illustrations) and "Diseases of Newborn Calves."

Dr. F. C. Tucker, Claypool, Ind.: "Poultry Practice" and "Poultry Disease."

Dr. J. W. Safford, Missoula: "A Demonstration of Short Time Pasteurization," at the Community Creamery, which contributed a Dutch lunch to members of the Association.

Dr. E. C. Stone, College of Veterinary Medicine, Washington State College, Pullman: "Recent Developments in Rumen Physiology."

Dr. W. R. Krill, dean, College of Veterinary Medicine, The Ohio State University, Columbus: "Veterinary Obstetrics."

Mr. Harald R. Cox, director, Section of Viral and Rickettsial Research, Lederle Laboratories, Pearl River, N. Y.: "Studies on Newcastle Disease Virus."

Dr. Howard Welch, head, Department of Veterinary Science, Montana State College, Bozeman: "White Muscle Disease."

A complete and varied program was arranged for the ladies, who also enjoyed the banquet with their husbands.

s/E. A. TUNNICLIFF, *Secretary.*

New Jersey

Personal.—Dr. Myron S. Arlein, former major, Veterinary Corps, U. S. Army, and staff member of the Angell Memorial Animal Hospital, Boston, Mass., announces the opening of the Arlein Animal Hospital, specializing in the care of dogs and cats, at Maplewood, N. J.

New York

New York City Association.—The May 4 meeting of the Veterinary Medical Association of New York City was held in the Manhattan Room of the Hotel Pennsylvania. The motion pictures "Training You to Train Your Dog," produced and sponsored by the Gaines Dog Research Center, and "Valiant Years," produced and sponsored by Associated Serum Producers, Inc., were presented.

At the June 2 meeting, Dr. Theodore Kazimiroff (D.D.S.) discussed "Applied Clinical Pathology in Dental Diseases of Animals," and Dr. R. J. Garbutt presented a case report.

s/C. R. SCHROEDER, *Secretary.*

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Precautions Against Swamp Fever.—Health certificates from veterinarians, certifying freedom from exposure to swamp fever, are being required on all horses entering the state of New York this racing season, *The Blood-Horse* reports (March 13, 1948).

North Carolina

Fisheries Research.—Following the lead of other coastal and several inland states, an institute of fisheries research was established at Chapel Hill with a laboratory at Morehead City. The movement is a reminder to the veterinary profession that fish make up an important part of the human diet and, therefore, fall into the hands of veterinary science for care "in the case of sickness." As Professor Frick of Kansas State College hinted, hydrobiology (or ichthyology) should be a branch of the veterinary college curriculum, for nowhere is there a more competent setup for the fundamental study of ichthyopathology. The aquatic fauna is subject to the same laws of reproduction, growth, and livability as the other edible creatures of the planet, and knowledge thereof is being developed in a number of research laboratories without having aroused much interest in our circle. Vague indeed is the knowledge of fish in the animals-to-man chapters of preventive medicine.

Ohio

Conference for Veterinarians.—The seventeenth annual conference for veterinarians was held at the College of Veterinary Medicine, The Ohio State University, Columbus, on June 16-18, 1948. The following program was presented:

Dr. Harlan E. Jensen, Cleveland: "Nutritional Requirements in Small Animals."

Dr. Wayne H. Riser, North Shore Animal Hospital, Evanston, Ill.: "Hospital Management" and "Herniated Intervertebral Discs."

Dr. Gerry B. Schnelle, the Angell Memorial Animal Hospital, Boston, Mass.: "Geriatrics—Problems Associated with Age in Small Animals" and "Feline Diseases."

Dr. C. Roger Smith, Department of Veterinary Physiology and Pharmacology, The Ohio State University, Columbus: "Streptomycin in Small Animals" and "Streptomycin in Large Animals."

Dr. James H. Steele, Veterinary Public Health Division, Communicable Disease Center, Washington, D. C.: "National Control of Rabies."

Dr. Allan Greenlee, Division of Communicable Diseases, Ohio Department of Health: "Proposed Rabies Control Program in Ohio."

Dr. Claude S. Perry, Department of Ophthalmology, College of Medicine, The Ohio State University: "Surgical Diseases of the Eye."

Dr. F. J. Kingma, Department of Veterinary Physiology and Pharmacology, The Ohio State University: "Treatment of Filariasis in Dogs."

Dr. J. L. Krider, Department of Animal Husbandry, University of Illinois, Urbana: "Nutritional Requirements of Swine."

Mr. J. S. Coffey, Department of Animal Husbandry, The Ohio State University: "Feeding of the Breeding Herd."

Dr. Damon Catron, Department of Animal Husbandry, Iowa State College, Ames: "Feeding of the Market Herd."

Dr. Wise Burroughs, Department of Animal Science, Ohio Agricultural Experiment Station, and Department of Veterinary Research, The Ohio State University: "Nutritional Diseases of Swine."

Dr. C. R. Donham, Department of Veterinary Science, Purdue University, Lafayette, Ind., led a panel discussion on "Conditions Affecting Swine." Other members of the panel were Drs. J. L. Krider, L. D. Frederick, Wise Burroughs, Howard Hinchman, Damon Catron, H. S. Starr, and Messrs. J. S. Coffey and W. L. Robison.

Dr. R. L. McMahon, Lima: "The Rôle of the Practitioner in the Artificial Insemination Program."

Dr. W. J. Gibbons, Department of Surgery and Medicine, Alabama Polytechnic Institute, Auburn: "The Differential Diagnosis of the So-Called X-Diseases," and "Nervous Diseases of Animals" (with illustrations).

Dr. F. R. Koutz, Department of Veterinary Parasitology, The Ohio State University: "Sulfaquinoxaline in Avian Coccidiosis Control."

Dr. Carroll K. Mingle, assistant in charge, Tuberculosis and Brucellosis Eradication Division, BAI, Washington, D. C.: "The Use of Strain 19 Vaccine."

Dr. Thurman B. Rice, Department of Public Health, Indiana University Medical Center, Indianapolis: "Brucellosis as an Occupational Disease."

Dr. H. G. Geyer, BAI, the Ohio Department of Agriculture: "The Brucellosis Program in Ohio."

s/RUSSELL E. REBRASSIER, *Secretary.*

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Cincinnati Rabies Ordinance Upheld.—The city ordinance requiring inoculation of dogs against rabies was upheld recently by Judge Thomas H. Morrow in Common Pleas Court in Cincinnati when he refused to grant a temporary injunction which had been sought to restrain Dr. Carl A. Wilzbach, city health commissioner, from applying the ordinance. Judge Morrow said the evidence did not confirm the allegations made by a housewife and a dog kennel operator that rabies inoculations make dogs rabid, and that, in his opinion, the ordinance is a good one and had been beneficial to the public. Attorney for the plaintiffs stated he would still try to get the city council to repeal the ordinance.

Oklahoma

Tulsa Association.—The May 7 meeting of the Tulsa Veterinary Medical Association was held at the Tulsa Hotel. Dr. R. Q. Atchley (M.D.) discussed "The Surgical Technique of Thyroidectomy and Herniotomy," and illustrated his talk with motion pictures. Dr. W. F. Irwin, chairman of the Rabies Committee, reported that, from March 1 to May 1, 4,900 dogs had been vaccinated by members of the association in connection with the P.T.A.-sponsored compulsory rabies vaccination ordinance. In addition to this, private practitioners vaccinated 4,000 dogs.

s/CHARLES S. GREER, *Assistant Secretary.*

Pennsylvania

Pennsylvania State Association on the Air.—Station WPEN, of Philadelphia, invited the Pennsylvania Veterinary Medical Association to participate in a public interest program entitled "The Doctor and the Lawyer Next Door," which began the first of June. Members of the State Association will answer questions on veterinary science. The Philadelphia Bar Association and the Philadelphia County Medical Association are also participating. The program is heard from 12:05 p.m. to 12:30 p.m. on Mondays.

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Keystone Association.—The Keystone Veterinary Medical Association met on May 26 at the University of Pennsylvania, School of Veterinary Medicine. The following officers were elected: Drs. J. V. McCahon, *president;* and Raymond C. Snyder, *secretary.* Dr. S. F. Scheidy presented a brief review of papers presented at the recent AAHA convention at Atlanta, Ga., and Dr. Norbert R. McManus discussed Veterinary Law.

s/RAYMOND C. SNYDER, *Secretary.*

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Bucks Montgomery Association.—The Bucks Montgomery Veterinary Medical Association met at the Moose Home in Doylestown on June Guest speaker was Dr. Edwin P. Taylor, Buckingham, who spoke on "Equine Practice."

At the May 12 meeting, Mr. W. F. Greenawalt, Bucks County Agent, discussed Bucks County Soils.

s/J. G. SHUTE, *Secretary.*

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Dean Kelser Honored by National Academy of Sciences.—Raymond A. Kelser, dean of the School of Veterinary Medicine and professor of Bacteriology, University of Pennsylvania, since 1946 was recently elected to the National Academy of Sciences, foremost scientific organization in the country. The citation regarding Dean Kelser's contributions to science referred particularly to his work on anthrax, rabies, surra, rinderpest vaccine, the mosquito transmission of equine encephalomyelitis, Chagas' disease, and other important observations in the field of animal pathology.

Dr. R. A. Kelser

The National Academy of Science was established by act of Congress, approved by President Abraham Lincoln, on March 3, 1863. It has 11 sections representing the basic fields of science; its membership, originally limited to 50, is now placed at 350. So far as known, Dr. Kelser is the only member from the field of veterinary medicine ever elected to the Academy.

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Veterinary Science and the Longer Life.—In an address before the graduating classes of the medical sciences division of the University of Pennsylvania, March 6, 1948, Dr. Esmond R. Long said (*Science, 107,* March 26, 1948): "During the last 50 years preventive medicine grew as rapidly as did curative medicine. Much of it was mediated through sanitary engineer-

ing and veterinary science. The filtration and chlorination of water, the pasteurization of milk, and the inspection and proper handling of meat and other food products enormously reduced the incidence of typhoid fever and food poisoning, eliminated the hazard of bovine tuberculosis in children, and went far to prevent the milk-borne diseases, brucellosis and septic sore throat. Veterinary medicine eradicated, or brought under control, Texas fever and foot-and-mouth disease in cattle, hog cholera in swine, and glanders in horses—outstanding achievements in the livestock industry."

Quebec

Research Laboratory Opened.—The Department of Agriculture has opened a Veterinary Research Laboratory on the campus of the Provincial Veterinary School at St. Hyacinthe. This laboratory, distinct from the Veterinary Diagnostic Laboratory which will continue to function in Quebec City, is under the direction of Dr. Paul Genest (D.V.M. University of Montreal, 1936; D. Sc. Laval University, 1947). Dr. Genest previously served as assistant professor of bacteriology, professor of histology, provincial veterinary bacteriologist, and has studied under a provincial scholarship in the graduate school of McGill University. Among his publications are studies on equine infectious anemia, action of sulfonimides on egg shell formation, Alcaligene pneumonia in young pigs, avian streptococcus, klebsiellosis in mink, diagnosis and treatment of brucellosis, etc.

According to Dr. J. M. Veilleux, director of the Provincial Animal Health Service, the purposes of this new research laboratory will be to carry out studies applicable to problems of the Province, to collaborate with the veterinary school by making available its methods and findings, to complement the present laboratory services available to practicing veterinarians by placing certain additional bacteriologic and diagnostic services at their disposal and to foster a close collaboration between the School of Veterinary Medicine and the Animal Health Service.

Tennessee

Annual Meeting.—At the fortieth annual meeting of the Tennessee Veterinary Medical Association on April 5-6 at the Andrew Johnson Hotel, motions were made to require members of the State Association to be members of the AVMA, and to drop members for nonpayment of dues.

New members admitted to the Association at this meeting were Drs. H. C. Caudle, Knoxville; Perch Clayton, Memphis; D. E. Cooperrider, Knoxville; R. H. Davison, Winchester; O. E. Galyon, Loudon; L. L. Isaacson, Shelbyville; J. G. Moore, Jr., Lawrenceburg; W. F. Sims, Knoxville; and F. P. Woolf, Knoxville.

With the assistance of Mrs. A. E. Bott, first vice-president of the Women's Auxiliary of the AVMA, the Auxiliary of the TVMA was organized with 22 charter members. Officers are Mesdames M. L. Farris, Morristown, *president;* H. E. Hill, Maryville, H. W. Nance, Lawrenceburg, C. M. Stroup, Somerville, *vice-presidents* and G. Eason, Kingsport, *secretary-treasurer.* The first project of the new organization will be to provide books for the College of Veterinary Medicine, Alabama Polytechnic Institute, Auburn.

Veterinarians and their wives were entertained at a banquet at which Dr. C. E. Kord, state veterinarian, was toast-master.

S/H. W. NANCE, *Secretary*

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"Chief" Finds a Friendly Gesture Pays.—Veterinarians have hearts. To prove the point is a case in Knoxville. Chief, presently the Dalmatian mascot of Oak Ridge fire station No. 4, won this distinction because, when a veterinarian started to inject the hypodermic needle

Chief and his new master.

"to put him to sleep," at the request of his former owner, the dog raised his paw in friendly gesture to shake hands. That was too much for the veterinarian and he set about finding a new home for Chief. He was successful when he met Fireman Harrington who promptly offered to take charge of the dog, and who says: "Chief has learned the difference between the two phones at the fire hall, and when the phone on which alarms are reported rings, he is the first to the fire truck."

S/DENNIS SIKES

Note.—Dr. Sikes is not the veterinarian referred to but, heartened by the write-up about the dog in a Knoxville paper, sent a report to the JOURNAL.

Texas

Veterinary Conference.—The Texas conference for veterinarians was held on June 17 and 18 at the School of Veterinary Medicine, A. & M. College of Texas, College Station. After an introduction by Dr. R. C. Dunn, dean of the

School of Veterinary Medicine, the scientific program was presented.

Dr. P. L. Piercy, associate veterinarian, Department of Veterinary Science, College of Agriculture, Louisiana State University, Baton Rouge: "Anaplasmosis."

Dr. E. S. Tierkel, officer in charge of the rabies control branch, U. S. Public Health Service, Virus Research Laboratory, Montgomery, Ala.: "Rabies Control."

Dr. H. W. Johnson, professor of surgery, School of Veterinary Medicine, Colorado A. & M. College, Ft. Collins: "Traumatic Gastritis and Related Digestive Disturbances in Dairy Cattle" and "Cesarean Section in the Cow."

Dr. B. T. Simms, chief, U. S. BAI, Washington, D. C.: "Foot-and-Mouth Disease."

Dr. W. A. Boney, Jr., Division of Veterinary Science, Texas Agricultural Experiment Station, College Station: "Newcastle Disease."

Dr. E. F. Schroeder, chief of staff, the Angell Memorial Animal Hospital, Boston, Mass.: "Small Animal Orthopedics—Hip Injuries" and "Injuries in the Region of the Stifle."

Dr. A. H. Groth, director, Regional Animal Disease Research Laboratory, BAI, USDA, Auburn, Ala.: "Gastrointestinal Parasites of Cattle."

Dr. V. B. Robinson, professor, Department of Veterinary Pathology and Bacteriology, A. & M. College of Texas: "Laboratory Diagnosis."

The Ladies' Auxiliary was entertained at a tea at the home of Mrs. R. C. Dunn, a picnic at the home of Mrs. H. Schmidt, and the Conference banquet and dance.

s/R. D. TURK, *Chairman.*

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County Association.—The Veterinary Medical Association of Bexar County met May 20 at the San Antonio Health Department Auditorium. The films "Gelfoam in Surgery" and "Treatment of Mange" were shown and the committee on Rabies outlined efforts to revise the existing ordinances. The following officers were elected: Drs. W. Z. Burke, San Antonio, *president;* C. R. Watson, San Antonio, *vice-president;* and Albert C. Nagle, San Antonio, *secretary-treasurer.*

For the July meeting, a western barbecue is planned at Pablo's Grove.

s/ALBERT C. NAGLE, *Secretary.*

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Dr. Madin in Europe to Study Foot-and-Mouth Disease.—Dr. Stewart H. Madin (Tex. '38), of the University of California, has gone to Europe to study foot-and-mouth disease, *Science Service* reports. He will join three U. S. BAI veterinarians (*see* JOURNAL, May, 1948: 332) who were sent abroad a few months ago to observe research procedures and assist in vaccine production for the Mexican campaign.

Washington

Conference for Veterinarians.—The State College of Washington, College of Veterinary Medicine, Pullman, held a conference for veterinarians June 21-23, 1948. The following program was presented.

Dr. R. A. MacIntosh, head, Department of Medicine, Ontario Veterinary College, Guelph: "Illustrated Clinical Cases" and "Sulfas in Veterinary Medicine."

Dr. J. S. Carver, chairman, Department of Poultry Husbandry, Washington State College: "Problems of the Poultry Industry."

Dr. E. V. Ellington, director, Agricultural Extension Service, Washington State College: "Extension's Rôle in Aiding Disease Control."

Dr. H. C. Smith, Allied Laboratories, Sioux City, Iowa: "Progress in Veterinary Research."

Dr. F. C. Tucker, Claypool, Ind.: "Problems of Poultry Practice" and "Newcastle Disease."

Dr. L. P. Doyle, research veterinarian, Purdue University, Lafayette, Ind.: "Baby Pig Losses" and "Brucellosis in Swine."

Dr. T. J. Cunha, Department of Animal Husbandry, Washington State College: "Recent Advances in Swine Nutrition."

Dr. A. O. Shaw, Department of Dairy Husbandry, Washington State College: "Dairy Cattle Breeding Analysis."

Dr. H. W. Johnson, Division of Veterinary Medicine, Ft. Collins, Colo.: "Traumatic Gastritis and Related Digestive Disturbances" and "Urethral Calculi in the Steer."

Dr. L. C. Moss, Division of Veterinary Medicine, Ft. Collins, Colo.: "Progress in Small Animal Medicine" and "Mental Disturbances in Small Animals."

Dr. J. C. Knott, director, Institute of Agricultural Sciences, Washington State College: "Importance of Veterinary Medicine to Agriculture."

Dr. W. R. Krill, dean, College of Veterinary Medicine, The Ohio State University: "Bovine Obstetrics."

Dr. G. C. Holm, vice-director, Agricultural Experiment Station, University of Idaho, Moscow: "Data on Disease Losses."

Dr. C. R. Schroeder, Lederle Laboratories, Pearl River, N. Y.: "Desiccated Biological Products."

Laboratory and clinical demonstrations were conducted upon request throughout the conference.

s/R. E. NICHOLS, *Dean.*

Wisconsin

North Central Association.—The North Central Wisconsin Veterinary Medical Association held its summer meeting June 10, 1948, at the Elks Country Club, Chippewa Falls. Speakers on the program were Drs. A. R. Roseberg, Minneapolis, Minn.: "Hormones"; C. A. Brandly, Madison: "Veterinary Research"; G. K. Underbjerg, Madison: "Sterility." Toast-master at the banquet was Dr. J. B. Collins.

s/GEORGE LANG, *Secretary.*

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Milwaukee Association.—The annual meeting of the Milwaukee Veterinary Medical Association was held June 15 in the lecture hall of the Wisconsin Humane Society. Dr. T. T. Chaddock, veterinary director of Fromm Laboratories, discussed "Canine Encephalitis," and showed a recent film on the experimental work done on this disease. Dr. Chaddock also showed slides of various conditions existing in fur animals.

s/K. G. NICHOLSON, *Secretary.*

Medical Milk Commissions and Milk Producers' Convention.—The American Association of Medical Milk Commissions and the Certified Milk Producers Association of America met at the Avalon Hotel in Waukesha, June 18-21, 1948. Among the speakers was Dr. D. T. Berman, Department of Veterinary Science, University of Wisconsin, Madison, whose subject was "Experimental Work on Brucellosis Control." In addition to the scientific program, a tour was made of certified milk farms to show how certified milk is produced, handled, and processed.

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Veterinary Supervisor Needed.—The Bureau of Personnel, Madison, has announced that examinations are being conducted for veterinary supervisor. Qualifications for the position are graduation from a recognized college of veterinary medicine, a valid license to practice veterinary medicine in the state of Wisconsin, and three years' experience in general practice, some of which shall have been in a supervisory capacity. Duties of a veterinary supervisor are to assist in special investigations of the occurrence of brucellosis in rural sections of Dane County and adjacent areas. The salary is $315 plus $30 bonus. Applications will be accepted and examinations conducted until the needs of the service have been met. Address inquiries to the Bureau of Personnel, State Capitol, Madison 2, Wis.

FOREIGN

Ceylon

Rinderpest Vaccine—A Correction.—Following publication of an item on goat virus (rinderpest) vaccine in the March JOURNAL (p. 278), Dr. D. W. Amarasinghe of Ceylon sent the following interpretation of the failure reported:

"It is incorrect to state that Indian cattle are more susceptible to rinderpest than European. In fact, most Indian breeds are resistant to a high degree, as a result of their long exposure to this infection.

The goat virus (rinderpest) vaccine developed in India was a strain of virus attenuated to suit the resistant Indian breeds. In order to use this method on more susceptible animals, it has to be used with immune serum.

If the immune serum is to be discontinued, a different and more attenuated strain would have to be worked out through goats. Such a modified strain of goat virus (rinderpest) vaccine suited to more susceptible cattle was successfully developed by Daubney in Kenya.

Similarly, the use of the strain of egg-attenuated virus (rinderpest) vaccine produced by a combined group of Canadian and American workers* is suitable for immunizing highly susceptible cattle. In order to develop a vaccine for resistant animals by this method, it would be necessary to adapt and attenuate a suitable strain.

The report on the trials made with the present strain of egg adapted virus (rinderpest) vaccine in Kenya, published in the *Veterinary Record, 59*, July, 1947, is of interest."

S/D. W. AMARASINGHE,
Veterinary Officer, Ceylon.

*Am. J. Vet. Res., 7, (April, Part 2, 1946): 133-237.

China

Tuberculosis in School Children.—Of 2,784 Peking primary school children under 15 years of age, who were subjected to the double tuberculin test, 5 per cent showed an incidence of tuberculous infection or pulmonary tuberculosis at the age of 5 and 80 per cent at 15. All of the reactors were examined by fluoroscopy. There was no difference between sexes, and no case of the reinfection type was found. —*From reports of the Peking Tuberculosis Sanitarium in Biol. Abstr., Sec. C., Dec., 1947.*

A significant conclusion may be drawn from the fact that milk of cows was not a factor, since the natives of Peking are not milk drinkers.

Holland

Weil's Disease Not Transmitted by Fishes. An investigation carried out by P. H. van Thiel (*Acta Brevia Neerland, 14*, (1946): 4-8) proved that fishes are not susceptible to experimental inoculations or exposures to Leptospira spp. and, therefore, cannot be regarded as a medium of transmission to man. Even in heavily contaminated water, fishes with lesioned skin do not contract the infection.—*From Biological Abstracts.*

Italy

Bull Semen from the U. S. A.—The insemination of cows with semen transported by air from the United States in April, 1947, resulted in the birth of 31 perfectly healthy calves. This and the results obtained from a second and third shipments were reported at the International Congress of Animal Production at Milan in June. The semen was that of Holstein-Friesian bulls of high zoötechnic value, and, in all, a sufficient amount to impregnate 500. These trials established the practicability of long-range breeding of cattle.—*From Rev. d. Path. Comp.—March-April, 1948.*

Latin America

Medical Education.—Formal medical education was established in Latin America long before that of North America. The first medical school of the Western Hemisphere was founded in Santo Domingo in 1538, just forty-six years after Columbus accidentally discovered that island. In 1580, a medical school was established by the University of Mexico. These two institutions stand out in world history to the credit of sixteenth century Spain. Other medical schools were founded in Peru (1621), Cuba (1728), Chile (1756), Colombia (1758), all of which preceded Philadelphia (1765), and New York (1768). Based on a personal investigation in 1947, Morris Fishbein (*J. Am. M. A.*, May 1, 1948) points out that during the nineteenth and twentieth centuries, these early institutions deteriorated below "the established scientific standards." Fulltime teachers be-

came practically nonexistent and maintenance appropriations "completely inadequate," owing to political factors. Yet, in 1920, after a visit to South and Central America, Dr. Will Mayo spoke favorably about medical education in these Latin countires, and Dr. Fishbein found much to praise in the Oswaldo Cruz Institute (Rio de Janeiro), the Butantan Institute (São Paulo), the Institute headed by Nobel Prize winner, Houssay (Buenos Aires), the Hospital de Enfermedades de la Nutricion (Mexico, D. F.), the School of Tropical Medicine (Puerto Rico), and others, as they all point to a rehabilitation of medical studies in Latin America.

Insight into strange entanglements of veterinary education and research, brought out by the outbreak of foot-and-mouth disease in Mexico, shows that veterinary medicine too is striving to extricate itself from political factors that have been threatening the welfare of the Latin American countries. The medical-veterinary situation is a vicious circle. As Dr. Fishbein stresses, the sick are ill-prepared to produce. And, most certainly, if the animals needed "to produce" are pestered with plagues, production is doubly hampered.

Mexico

F.-and-M. Vaccination. — Says *Food Industries* for March: "Campaigns to eliminate foot-and-mouth disease in Mexico were forced into serum (vaccination) control when the economy of Mexico stopped large-scale killing. This means that for the first time we shall have a large scale test of the effectiveness of serum control of this important disease. The answers may not be fully convincing, but they will be better than anything yet known to veterinary science,"—besides slaughter and burial.

COMING MEETINGS

New York State Veterinary Society. Annual meeting Hotel Statler, Buffalo, N. Y. July 8-10, 1948. J. J. Regan, 1231 Gray Ave., Utica, N. Y., secretary.

Kentucky Veterinary Medical Association, Louisville, Ky., July 14-15, 1948. T. P. Strittmatter, Jr., 1034 Monmouth St., Newport, Ky., secretary-treasurer.

American Veterinary Medical Association. Palace Hotel, San Francisco, Calif., Aug. 16-19, 1948. J. G. Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

American Animal Hospital Association. Palace Hotel, San Francisco. Aug. 18, 1948, at 12:00 p. m. Wayne H. Riser, Evanston, Ill., executive secretary.

American Association for the Advancement of Science. Centennial Meeting, Washington, D. C., Sept. 13-17, 1948. J. M. Hutzel, 1515 Massachusetts Ave., N.W., Washington 5, D. C., assistant administrative secretary.

Southeast Missouri Veterinary Medical Association. J. V. Moore's Animal Hospital, Hayti, Mo., Sept. 29, 1948. F. A. Stepp, 405 N. St., Sikeston, Mo., secretary.

Purdue University. Annual Short Course for Veterinarians. Purdue University, Lafayette, Ind., Oct. 6-8, 1948. C. R. Donham, Department of Veterinary Science, Purdue University, head.

Southern Veterinary Medical Association. Annual Meeting. John Marshall Hotel, Richmond, Va. Oct. 11-13, 1948. A. A. Husman, 320 Agriculture Bldg., Raleigh, N. Car., secretary.

U. S. Livestock Sanitary Association. Shirley Savoy Hotel, Denver, Colo., Oct. 13-15, 1948. R. A. Hendershott, 1 West State St., Trenton 8, N. J., secretary.

Eastern Iowa Veterinary Association. Annual meeting. Hotel Montrose, Cedar Rapids, Iowa. Oct. 14-15, 1948. Laurence P. Scott, Waterloo, Iowa, secretary.

New England Veterinary Medical Association, Annual meeting. Boston, Mass., Oct. 14-15, 1948. C. Lawrence Blakely, 180 Longwood Ave., Boston, Mass.

American Public Health Association, Boston, Mass. Nov. 8-12, 1948. R. M. Atwater, 1790 Broadway, New York City 19, N. Y., executive secretary.

Executive Board of the American Public Health Association. Annual meeting at Boston, Mass., Nov. 8-12, 1948. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, N. Y., executive secretary.

American Society of Animal Production. Annual meeting. Sherman Hotel, Chicago, Ill., Nov. 26-27, 1948. H. M. Briggs, Oklahoma A. & M. College, Stillwater, Okla., secretary.

Nebraska State Veterinary Medical Association. Annual meeting. Cornhusker Hotel, Lincoln, Nebr., Dec. 8-9, 1948. L. V. Skidmore, College of Agriculture, Lincoln 1, Nebr., sec-

Are You Moving?

If you anticipate a change of address, notice should be given the AVMA Office by the 15th of the month, so that you will receive your JOURNAL for the succeeding month with as little delay as possible. Both old and new addresses should be given. The AVMA receives many requests monthly from members and subscribers for JOURNALS that have not been received because of failure to advise of change of address. These requests often involve hundreds of JOURNALS of one issue which have already been mailed to the old addresses. Your coöperation is urgently requested so that this situation may be corrected and thus avoid this unnecessary expense.

Illinois State Veterinary Medical Association. Annual meeting. Abraham Lincoln Hotel, Springfield, Ill., Jan. 26-28, 1949. A. G. Misener, 6448 N. Clark St., Chicago 26, Ill., secretary.

Chicago Veterinary Medical Association. Palmer House, Chicago, Ill., the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

Houston Veterinary Medical Association, Houston, Tex., the first Thursday of each month. Edward Lepon, Houston, Tex., secretary-treasurer.

Keystone Veterinary Medical Association. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., the fourth Wednesday of each month. Raymond C. Snyder, N. W. Cor. Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Massachusetts Veterinary Association. Hotel Statler, Boston, Mass., the fourth Wednesday of each month. C. L. Blakely, Angell Memorial Animal Hospital, 180 Longwood Ave., Boston, Mass., secretary-treasurer.

New York City Veterinary Medical Association. Hotel Pennsylvania, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

Saint Louis District Meetings. St. Louis, Mo., the first Friday of June and November, W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

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Foreign Congresses

International Congress of Genetics. Stockholm, July 7-14, 1948.

International Congress of Zoölogy. Paris, July 21-27, 1948.

World's Poultry Congress. Copenhagen, Denmark, Aug. 20-25, 1948. Secretariat General, Axelborg, Copenhagen 5, Denmark.

National Veterinary Medical Association of Great Britain and Ireland. Southport, England. Sept. 8-15, 1948. F. Knight, 36, Gordon Sq., London, W. C. 1, general secretary.

VETERINARY MILITARY SERVICE

Veterinary Activities

Dr. Thurman S. Grafton (MSC '47), Lansing, Mich., has been appointed a second lieutenant, Veterinary Corps Reserve, and upon his own request called to active duty and assigned to the Army Medical Center, Washington, D. C., for duty with the Veterinary Division, Army Medical Department Research and Graduate School.

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Dr. William E. Davenport, Decatur, Texas, has been appointed a second lieutenant, Veterinary Corps Reserve, and upon his own request called to active duty and assigned to Fort Sill, Okla., with temporary duty of twelve weeks at Chicago, Ill., to attend the Meat and Dairy Hygiene Course.

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Major Richard M. Zirkle (OSU '40), V. C., has been recalled to active duty and assigned to the Reno Quartermaster Depot (remount), Fort Reno, Okla. Prior to his separation, Major Zirkle served at remount stations and overseas.

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Captain Herman Tax (CORN '37), V.C., has been recalled to active duty and assigned to the 1300 ASU, New York Port of Embarkation, Brooklyn, N. Y. Previously, Captain Tax served at stations within the First Army from July, 1942, to June, 1946.

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Col. Floyd C. Sager Retired.—Col. Floyd C. Sager (CORN '17), Barton, N. Y., was placed on the retired list by reason of physical disability, effective May 31, 1948. In addition to his studies at the New York State Veterinary College, Cornell University, Colonel Sager was also a graduate of the Army Veterinary School, the Medical Field Service School, and had attended a special course of instruction in the science of breeding and clinics at the University of Kentucky, Lexington.

Colonel Sager was commissioned a second lieutenant in the Veterinary Corps on July 16, 1917, and has been promoted through the grades, obtaining the grade of colonel in August, 1943. During World War I, Colonel Sager was attached to the Fifteenth Field Artillery, Second Division, and served with the AEF from January, 1918, to August, 1919, being awarded the Silver Star with three oak leaf clusters.

Since 1919, Colonel Sager has served in various station assignments in the United States, his principal duties being remount and breeding service activities. At the time of his retirement, he was depot veterinarian at the Aleshire Quartermaster Depot (remount), Front Royal, Va.

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Col. Frank C. Hershberger Retired.—Col. Frank C. Hershberger (KCVC '13), Brooklyn, N. Y., was placed on the retired list of the Army effective May 31, 1948. Colonel Hershberger is also a graduate of the Medical Field Service School, the Army Veterinary School, and the Cavalry School, troop officers' course.

Colonel Hershberger was commissioned a second lieutenant, ORC, July 27, 1918, and ordered to active duty on August 1, going overseas in September of that year. Upon his return from overseas he was assigned to Camp Upton, N. Y. On September 16, 1920, he was discharged as major and accepted a commission as first lieutenant in the Veterinary Corps, Reg-

ular Army. He has been promoted through the grades, attaining his colonelcy on September 10, 1943.

In addition to serving as transport veterinarian, USAT Meigs from June, 1928, to October, 1929, and department veterinarian, Philippine Department, from March, 1935, to July, 1937, Colonel Hershberger was port veterinarian, New York Port of Embarkation from March, 1938, to June, 1946, when he was assigned to the Caribbean Defense Command with station in Panama as department veterinarian. At the time of his retirement he was serving at Camp Hood, Texas.

Colonel Hershberger was awarded the Legion of Merit in 1946 for outstanding service performed at the New York Port of Embarkation.

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Separation Criteria for Medical Department Officers with ASTP Training.—The Office of the Surgeon General, Department of the Army, recently restated the basis for separation of medical, dental and veterinary officers who were participants in the Army Specialized Training Program. A normal tour of duty for such officers is a minimum period of twenty-four months. An officer may be released prior to twenty-four months by the number of days he has accrued leave, or he may stay the full twenty-four months and draw two months' leave pay in a lump sum payment if he has not used any of his authorized leave.

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Lieutenant Colonel Todd Returns to U. S.—Col. Frank A. Todd, Merrill, Iowa, chief of all Military Government veterinary medicine in the U. S. Zone of Germany, has returned home after seven years of uninterrupted foreign service with the U. S. Army.

Colonel Todd has served in posts from Reykjavik, Iceland, to Berlin, Germany, and has vacated his position as chief of the Veterinary Section of the Public Health Branch, Office of Military Government for Germany (U.S.), as well as his posts as U. S. Delegate on the Allied Control Authority body and as U. S. representative on veterinary matters to the bi-partite U.S./U.K. zones of Germany, for reassignment to Headquarters Military District of Washington, The Pentagon.

For his work overseas, Colonel Todd has been awarded the Legion of Merit, an official letter of commendation from the government of Iceland, and praise from the *International Institute des Epizoötics* in Paris.

At the veterinary laboratory in Iceland, Colonel Todd pioneered in providing fresh, uncontaminated milk to U. S. soldiers. While with

Lt. Col. Frank A. Todd

the Civil Affairs Division in London, he instigated, as early as 1944, the policy program for the supply and distribution of veterinary supplies to the war-devastated countries of Western Europe.

Colonel Todd received his degree of doctor of veterinary medicine from Iowa State College in 1933 and his master of public health degree from Yale in 1935. Recently, he completed a history for military government on the U. S. Army Veterinary Service during World War II.

BIRTHS

Dr. (MSC '39) and Mrs. D. R. Stephenson, Rockford, Ill., report the birth of a son in January.

Dr. (KSC '46) and Mrs. Albert L. Maxfield, Kansas City, Kan., announce the arrival of Nila Kathleen on Feb. 12, 1948.

Dr. (COLO '39) and Mrs. G. J. MacLean, Galesburg, Ill., announce the birth of a son, James Bruce, Feb. 28, 1948.

Dr. (KSC '43) and Mrs. Fayne H. Oberst, Manhattan, Kan., on February 29 became the parents of a daughter.

Dr. (KSC '46) and Mrs. Fred A. Bohmker, Sioux City, Iowa, became the parents of a daughter, Kristina Jane, early in March.

Dr. (ISC '43) and Mrs. Albin J. Nelson, Nashua, Iowa, announce the birth of a daughter, Linda Lee, March 12, 1948.

Dr. (ISC '46) and Mrs. B. C. Lowther, Hopkinton, Iowa, announce the birth of Katherine Ruth, March 24, 1948.

Dr. (KSC '45) and Mrs. Ralph L. Lowrey, Muscatine, Iowa, announce the birth of a son, Timothy Lewis, Apr. 5, 1948.

Dr. (COLO '39) and Mrs. Benjamin D. Blood, Seoul, Korea, announce the birth of a son, Brian John, on May 11, 1948.

DEATHS

L. J. Allen (ONT '95), Oklahoma City, Okla., died March 14, 1948.

Michael Beus (SAN FRAN '13) died Jan. 8, 1948.

★**Ellsworth S. Brown** (CORN) '23), Canandaigner, N. Y., died March 21, 1948. Dr. Brown was a member of the AVMA.

Thomas E. Corwin (NY-AMER '07), 62, Woodhaven, Long Island, N. Y., died Sept. 26, 1947. Dr. Corwin was a member of the Veterinary Medical Association of New York City and had been a member of the AVMA.

★**Anderson Crowforth** (CVC '91), 81, Lockport, N. Y., died March 13, 1948. Dr. Crowforth was a member of the AVMA.

Roscoe Erle Davis (CORN '15), Clinton, N. Y., died March 29, 1948.

★**William A. Dennis** (CORN '26), 46, Jamestown, N. Y., died in Largo, Fla., on Apr. 13, 1948, after an illness of six months. He had practiced in Jamestown, where he operated a pet animal hospital, for eighteen years. Dr. Dennis was admitted to the AVMA in 1935 and was also a member of the New York State Veterinary Society and past president of the Western New York and Chautauqua County veterinary medical associations.

J. Henry Faust (CHI '05), St. Louis, Mo., died March 15, 1948. Dr. Faust had been a member of the AVMA.

Lloyd E. Foster (CVC '10), Greenfield, Iowa, died March 12, 1948.

★**T. J. Gilloon** (MCK '08), 67, Dyersville, Iowa, died on Apr. 20, 1948. Dr. Gilloon was admitted to the AVMA in 1929.

William C. Hamilton, Jr., Ralston, Neb., died Jan. 28, 1948.

Chris W. Johnson (KCVC '09), Corpus Christi, Texas, died Dec. 24, 1947. Dr. Johnson had been engaged in general practice.

★**W. C. Kailer** (KCVC '08), 66, Natchez, Miss., died March 25, 1948. Dr. Kailer was admitted to the AVMA in 1917.

★**John P. King** (CIN '12), 55, San Diego, Calif., died on March 9, 1948. Dr. King was a member of the AVMA.

F. H. Kirwan (CVC '20), Kansas City, Kan., died Feb. 23, 1948.

Carl L. Lyness (CVC '18), 50, Chicago, Ill., died of a heart attack early in April. Dr. Lyness saw service in World War I, after which he was employed by the government as a meat inspector. In 1947, Dr. Lyness was admitted to the bar.

Nelson J. Mayer (CHI '08), Mitchell, S. Dak., died Apr. 6, 1948. Dr. Mayer had been a member of the AVMA.

★**Jeptha H. Nichols** (IND '16), 66, Paris, Ill., died May 8, 1948, after an illness of several months. He was a veteran of World War I, and had practiced in Paris for thirty years. Dr. Nichols joined the AVMA in 1918.

W. E. Norden (KCVC '08), 69, Manning, Iowa, died Feb. 10, 1948. Dr. Norden had been a member of the AVMA.

S. J. Olson (KCVC '10), Wilcox, Neb., died Jan. 18, 1948. Dr. Olson had been a member of the AVMA.

William Readhead (ONT '93), 81, Detroit, Mich., died on Jan. 23, 1948. Dr. Readhead had made his home in Detroit since his retirement from practice at Lenox, Iowa, in 1939.

Otto Schnatterly (CVC '16), 68, Good Hope, Ill., died on Dec. 27, 1947. Dr. Schnatterly had been in practice in Good Hope for nearly 30 years.

F. O. Schneider (CIN '14), Nicholasville, Ky., died Apr. 6, 1948.

★**H. R. Schrumpf** (IND '23), 48, Indianapolis, Ind., died early in April, 1947, in an automobile accident. Dr. Schrumpf was a member of the AVMA.

★**Seaborn H. Still** (KCVC '11), 59, San Juan, Puerto Rico, died Dec. 22, 1947. Dr. Still was admitted to the AVMA in 1929.

★**H. C. Simpson** (KCVC '99), 74, Pomona, Calif., died May 5, 1948. Before coming to California in 1920, Dr. Simpson was for many years secretary of the old Missouri Valley Veterinary Medical Association. He had been a member of the AVMA since 1900.

A. J. Striegel (CVC '18), Murphysboro, Ill., died on March 13, 1948. Dr. Striegel had been a member of the AVMA.

Major James T. Traylor (KCVC '13), 59, Dallas, Texas, died suddenly on March 8, 1948, following a heart attack.

C. W. Washington (UP '13), Gibsonia, Pa., died March 2, 1948. Dr. Washington had been a member of the AVMA.

★**J. S. Watson** (CVC '09), 66, Mexia, Texas, died March 3, 1948. Dr. Watson was a member of the Texas Veterinary Medical Association and of the AVMA.

M. J. Woodliffe (CVC '03), 75, Denver, Colo., died May 22, 1948. At the time of his death, Dr. Woodliffe had been operating a veterinary hospital in Denver. He had been a member of the AVMA since 1907.

Elkan H. Yunker (UP '06), 66, Philadelphia, Pa., died March 19, 1948, after a long illness. Dr. Yunker had been chief of the Philadelphia Bureau of Public Health, Meat, Milk, Livestock, and Food Division.

★Indicates members of the AVMA.